MANUFACTURERS RECORD

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"The Constitution of the United States is a law for rulers and people, equally in war and in peace, and covers with the shield of its protection all classes of men, in all times and under all circumstances.

"No doctrine involving more pernicious consequences was ever invented by the wit of man than that any of its provisions can be suspended during any of the great exigencies of government. Such a doctrine leads directly to anarchy or despotism - the theory of necessity on which it is based is false."

MACKLIN GRINDING WHEELS



MACKLIN COMPANY

Manufacturer of Grinding Wheels

JACKSON, MICHIGAN, U. S. A.

Sales Offices

CHICAGO - NEW YORK - DETROIT - PITTSBURGH
CLEVELAND - CINCINNATI - MILWAUKEE
PHILADELPHIA

Macklin Grinding Wheels are made in all sizes and shapes for every type of grinding job. No matter what your grinding problem may be there is a Macklin wheel that will show cost saving results and "Protect Your Production". Ask for the services of a Macklin Field Engineer—no obligation.

If you use grinding wheels write for Macklin's new 64 page book "Helpful Hints and Safety Suggestions". To such requests on business stationery this book will be mailed free.

Address - - - MACKLIN Co.,
Dept. Q
Jackson, Michigan.



They Speak a Language the Japs Understand

FIRE ONE! FIRE TWO!

From the first day of this war, the crews of U. S. submarines have thus "reasoned" with the enemy—and in his own waters.

They know *action* and *engines*—for they literally live with and by the Diesels which take them there and bring them back.

Many of these Diesels are Fairbanks-Morse Diesels. We feel that nothing short of our level best is good enough for these men of the silent service.

FAIRBANKS, MORSE & CO.



CELOTEX VAPOR-SEAL ROOF INSULATION

Has a Thermal Conductivity of Only 0.30!

MANY war industries need, now more than ever, the protection of thoroughly dependable roof insulation. And Celotex Vapor-seal Roof Insulation has conductivity of only 0.30 per inch thickness.

What's more, Celotex Vapor-seal Roof Insulation is asphalted on all surfaces and edges, and integrally treated to resist dry rot. It can't get water-soaked if it happens to be rained on while awaiting application. *And* the exclusive, patented channel on all edges provides for the equalization of trapped air and moisture, tending to reduce a common cause of roof blisters.

Use Celotex Vapor-seal Roof Insulation with Celotex Bonded Built-Up Roofs for the ideal combination. Undivided responsibility—both products backed by the world-wide quality reputation of The Celotex Corporation—is your assurance of complete satisfaction. Mail the coupon for complete information.

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REG. U. S. PAT. OFF.

ROOFING • INSULATING BOARD
ROCK WOOL • GYPSUM WALLBOARD • LATH
PLASTER • ACOUSTICAL PRODUCTS

THE CELOTEX CORPORATION • CHICAGO

MR 3-43

THE CELOTEX CORPORATION, CHICAGO
Please send complete information on Celotex Vapor-seal Roof Insulation and Celotex Bonded Built-Up Roofs.

Name.....
Address.....
City.....
County..... *State*.....

MANUFACTURERS RECORD

Established 1882

CONTENTS

MARCH, 1943

Volume 112, Number 3

EDITORIALS

Thoughts for the Thoughtful 6
To be or not to be 19
Incompetence at Home 21
The 1943 Slacker 21

FEATURE ARTICLES

United States Iron Ore Reserves 22
The Lowly Peanut—Its Contribution to Oils and Fats 24
Bonds vs. Dues 25
"Keeping Them Sailing" 26
Coal—a product of countless uses 28
Plastics for South Carolina by F. E. Lawrence 30
The Part of Trucking in the War Effort by H. D. Horton 32
South's Construction Contracts Total $103,502,000 in February by S. A. Lauver 34
Important New Industrial Plants and Expansions in the South During February 36
Parachute Cloth and Shrouds Production 38
Port Arthur Activity Reflects Texas' Industrial Gains by J. C. Watkins 40

DEPARTMENTS

New Methods and Equipment 46
Industrial News 48
Trade Literature 48
Index for Buyers 64
Index of Advertisers 66

MANUFACTURERS RECORD PUBLISHING CO.

Other publications: Construction (daily), Consrtuction (monthly) and Blue Book of Southern Progress.

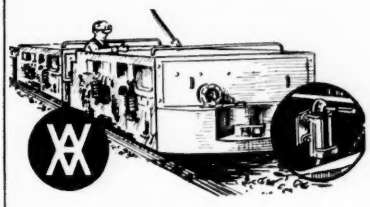
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Westinghouse...

HYDRAULIC BRAKES



Increase...

Haulage Capacity of Small Locomotives

Developed for mine and plant yard haulage units on which space limitations preclude use of compressed air brake apparatus, the Westinghouse Hydraulic Brake provides more suitable control than afforded by the usual hand brake.

Manipulation is simple, effortless, and precise. It responds instantly by a mere touch on the operating handle to supply any desired braking intensity. Graduations on or off in small increments can be made at will.

This fast and flexible operation facilitates spotting of cars at loaders — expedites movement over tracks of varying profile with uniform safety — reduces wear and tear on electrical apparatus and mechanical elements, as it eliminates the need for motor "bucking" or dragging brake shoes to check speed. Tandem operation is facilitated, as the brakes on both locomotives — permanently coupled — can be operated from the head unit.

This new equipment — a valuable means to increase haulage capacity — is a simple, compact system, easily installed on small locomotives, new or old... Complete information and price will be furnished upon request.

Westinghouse . . . .
AIR BRAKE CO.
Industrial Division
PITTSBURGH, PA.



DAKAR—WEST AFRICA

400 Miles South of the Sahara

When our troops swung into Dakar, they found Layne Wells and Pumps on the job, producing millions of gallons of water daily. The Dakar installations had been made under the direction of Layne engineers and are identical with the famous high efficiency, long lasting Layne Wells and Pumps now serving your own local cities and industries.

Layne Wells and Pumps are in use throughout the African War Zone. They were chosen from a field of world wide competitive makes. The reasons for their selection are quite obvious: more skillfully designed, more ruggedly built and more efficient in operation. In war as in peace, their dependability has never faltered.

Tremendous quantities of well water is an absolute war necessity and today hundreds of speedily installed Layne Wells and Pumps are serving aircraft makers, ordnance works, munition factories, chemical plants, ship yards, flying fields, troop training areas and navy yards. Present production is now nearly 100 percent for the war needs, but every effort is being made to keep private and municipal installations in operation.

For literature, catalogs, folders, bulletins, etc., address

LAYNE & BOWLER, INC.
Memphis, Tenn.

LAYNE
PUMPS & WELL
WATER SYSTEMS

Affiliated Companies

Layne-Arkansas Company	Stuttgart, Ark.
Layne-Atlantic Company	Norfolk, Va.
Layne-Bowler New England Corp.	Boston, Mass.
Layne-Central Company	Memphis, Tenn.
Layne-Northern Company	Mishawaka, Ind.
Layne-Louisiana Company	Lake Charles, La.
Louisiana Well Company	Monroe, La.
Layne-New York Company	New York City.
Layne-Northwest Company	Milwaukee, Wis.
Layne-Ohio Company	Columbus, Ohio.
Layne-Texas Company	Houston, Texas.
Layne-Western Company	Kansas City, Mo.
Layne-Western Company of Minnesota	Minneapolis, Minn.
International Water Supply, Ltd.	London, Ontario, Can.

WORLD'S LARGEST WATER DEVELOPMENT

Thoughts for the Thoughtful

John D. Battle, executive secretary of the National Coal Association, announced that the mine output of bituminous coal for the week ended February 13 passed the 12,000,000-ton mark, amounting, on the basis of preliminary estimates, to 12,280,000 tons. This is a new production peak in more than a dozen years. The last time that the mine output of bituminous coal exceeded 12,000,000 tons was in 1929 for the week ended February 9, when production totaled 12,292,000 tons.

Rated weekly capacity of the industry on a five-day week basis, assuming sufficiency of rail freight cars or continuous loading at the mine tipples, has been figured at 12,000,000 tons. Total output of the bituminous mines in 1942 aggregated 580,000,000 tons according to the latest figures, which represents a weekly average of slightly more than 11,100,000 tons, about 93 per cent of rated capacity.

Production has been climbing in recent weeks, reflecting to some degree the inauguration of a six-day week at certain mines in some localities.

It is not back to the Horse and Buggy days. It is back to the House and Garden days.

The resumption of dividends on its common stock by the Southern Railway is a matter for congratulation not only to the stockholders of this important carrier, but to the entire South.

The superb work of the railroads under many difficulties created by the present emergency is worthy of all praise, and it is gratifying that their efforts are being attended by improved financial conditions.

Along with the work of scientists who have developed so many wonderful things that are proving invaluable in the present war, the outstanding accomplishment of private industry in providing equipment for the numerous battlefronts of all of the allied nations is deserving of more than passing notice.

This has been done despite many handicaps. Harassed by governmental restrictions, the arbitrary stand of union labor leaders, and now the pressing problem of absenteeism in the ranks of labor, previous records of estimated output are being exceeded.

Irving S. Olds, Chairman of the United States Steel Corporation, refers to it as "the battle of production" and speaks of American industry having performed "a production miracle during the first year of our par-

ticipation in the world conflict." At the same time he urges careful thought to be given to the transition from a war to a peace-time economy which "will be in the public interest and not destructive of our established American system of free private enterprise."

In the preservation of American ideals and the initiative which has made this country outstanding for its industrial accomplishments, nothing is more important than for all of us to have before us constantly the imperative need of maintaining the freedom for private enterprise that has developed a continent and will be of indispensable service to the rest of mankind in the world of tomorrow.

Can you imagine Mme. Chiang Kai-shek writing a syndicated newspaper column called "My Day" and being paid for it?

Business men seeking solution to their war production problems now have at their disposal a unit in Washington whose job it is to answer their questions or refer them to the proper WPB officials.

The service is designed to eliminate confusion and delays on the part of business men who want information about where to take their problems. The main unit, consisting of a Telephone Inquiry Service, has set up headquarters in Room 1501, Social Security Building, on Independence Avenue between Third and Fourth Streets in Washington, D. C.

Because of its location, close to the building entrance, visitors need no passes or badges. The unit is a sub-division of the Business Services Branch of the Administrative Division of WPB. In the same room WPB press releases, forms, orders and regulations are available.

The war in Europe will not be won before the German people have been hit so hard that they are made to realize that there is no hope for anything but unconditional surrender. The Germans are scared but they are not licked.

The medical profession hasn't done a lot of talking about the "sacrifices" its members are making. And yet doctors, perhaps more than any other group next to the service men, are making real sacrifices in this war.

Thousands of them have voluntarily given up their practices. They live in the foxholes with the soldiers. They fight and die with the navy and the marines. They perform miracles amid blood and suffering. Gone is the business for which they spent so many years in preparation, often on a financial shoe string.

The doctors left at home are making sacrifices too. Men who should be enjoying the leisurely aftermath of useful careers are back in harness working at a killing pace. They are on duty 24 hours a day—and they don't yell for time-and-a-half when Mrs. Jones is having a baby at 3 a.m.

The doctors are carrying out the tradition of American medicine in every emergency. Their example

(*Continued on page 8*)

For WAR EMERGENCIES





VALVES
HYDRANTS
and
PIPE LINE
ACCESSORIES



The high quality and dependability of M & H products play an important part maintaining maximum production of war materials in many manufacturing plants. M & H products are equally important for adequate protection of plants and factories against the increased fire hazard of war emergencies. A reserve supply is good insurance.

M & H GATE VALVES are cast iron body, bronze mounted, with double-disc parallel seat or solid wedge top, non-rising stem or outside screw yoke. They come either with flanged or screwed connections. Valves for fire protection lines are approved by both the Underwriters and the Factory mutuals.

M & H FIRE HYDRANTS are revolving head, dry top, bronze mounted. They also are approved by the Underwriters and Factory Mutuals. Entire main valve assembly is removable through barrel without digging. Special Traffic Model is fitted with breakable bolts and stem coupling, designed to break at ground line under impact. Repairs are made simply by renewing bolts and coupling, without shutting off the water.

M & H PRODUCTS INCLUDE

FIRE HYDRANTS
GATE VALVES
TAPPING VALVES
WALL CASTINGS
SPECIAL CASTINGS
TAPPING SLEEVES
CHECK VALVES
FLOOR STANDS
EXTENSION STEMS
SHEAR GATES
MUD VALVES
VALVE BOXES
FLAP VALVES
SLUDGE SHOES
FLANGE AND FLARE FITTINGS
FLANGED FITTINGS
B & S FITTINGS
CUTTING-IN TEES

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

INDUSTRIAL SURVEYS

in the Seaboard Southeast

FOR MANY YEARS we have helped industry by furnishing reliable surveys on industrial locations in the Seaboard Southeast.

MORE RECENTLY we have likewise assisted numerous Government agencies by supplying authentic reports on various parts of our territory.

OUR PRIME OBJECTIVE:—To contribute to our Country's war effort in every possible way until victory is won.

INDUSTRIAL DEPARTMENT

SEABOARD AIR LINE RAILWAY

WARREN T. WHITE
General Industrial Agent
Norfolk, Va.



LOW-COST PROTECTION with

Careyclad BLACK METAL COATING

CAREYCLAD protects metal against rust and weather—is extremely durable, abrasion resistant, and resistant to acid, alkaline and salt atmospheric conditions. It is a practical, low-cost coating for metal buildings, iron sheets, structural steel, bridges, heavy machinery, ornamental iron work, and numerous sheet metal products.

CAREYCLAD also renews dried-out felt in composition roofs. It impregnates the dried out felt . . . forms a continuous one-piece coating on entire roof surface . . . is not subject to hair cracking, alligatoring, pinhole formation, slipping or sliding.

CAREYCLAD may be applied by spray painting, brushing or dipping, at everyday indoor or outdoor temperatures. Promptly available through CAREY Branches and Distributors everywhere. Write Dept. 61 for details.

THE PHILIP CAREY MFG. COMPANY
Dependable Products Since 1873
LOCKLAND, CINCINNATI, OHIO

might well be followed by workers in other fields. And yet this the most self-sacrificing of all of our professions is being prosecuted by our Federal Government for violating the anti-trust laws while the musicians union is "whitewashed."

Years ago there was a popular song entitled "Who takes care of the caretaker's daughter while the caretaker's busy taking care?" A present day version of this same song might read "Who manages the business man's business while the business man is busy with the busy bodies?"

Estimated income of $125 billion this year and only $70 billion available in goods leaves a lot of money as excess purchasing power.

Higher taxes to lessen the danger of inflation have been levied, and our lawmakers agree these cannot go much higher without seriously affecting private industry. Individuals with big incomes are having these incomes confiscated by high surtaxes. They now have little or no surplus earnings to invest in expanding private enterprise, or for that matter, for buying government bonds. The small income earner has a bigger income than he ever had before. He does not invest it. He has always been accustomed to spending it. If this were not true, why should there be "Social Security" laws?

This hitherto small income earner is the present threat to a runaway purchasing power that is bound to cause inflation. This threat can be checked and avoided by the broadest kind of base of taxation. The basis of taxation is not broad enough. This base should go horizontally across the entire population by means of a Federal general sales tax.

The men and women of the country are starting to line up before the offices of Uncle Sam, receiving teller; most of them have never been there before. Many of these are learning for the first time that it is more blessed to give than to receive.

Imagine, if you can, a New Dealer in place of Eddie Rickenbacker at the present time. Try to imagine the honors and decorations that would be heaped on his head and pinned on his breast. But Captain Eddie is not a New Dealer. He is an ex soldier who volunteers his services and obeys orders. He is also an American who feels free when his mission is completed to express his opinions.

Captain Rickenbacker, after months in a hospital as a result of injuries sustained in an airplane accident, freely gave his services to his country and by doing so suffered hardships seldom endured by man. He still goes undecorated by his government but that government permits him to be criticized without protest by its supposed friend, organized labor.

Just back from Washington, the president of a prominent southern printing plant has this to say about modern definitions of old established words:

The new definition of a "coordinator" is "a man who brings chaos out of confusion." How many of us have learned this same present day truth?

In referring to the mobilization of manpower, materials and equipment for maximum effectiveness a well known businessman says:

"To maintain a proper balance will be a difficult task, but it is essential that the civilian economy should not be trimmed down to the point of impairing the war effort."

Think it through. What is a necessary civilian economy that will be of most help in winning the war?

It must be based upon fairness, and that means employers as well as employees.

That lets the Wagner law out.

It must be based upon a reasonable profit and the encouragement of private enterprise and investment.

That lets out the attempts to limit individual incomes.

It lets out the army of government's useless jobholders so that business houses can get more help.

It lets out the hampering flub-dub of a myriad of government forms, the filling out of which takes away so much precious time from productive effort.

It lets out the theorists, the dreamers and places the economy in the hands of men who are accustomed to meet payrolls and deal with the facts of life from a practical standpoint.

It lets out the false assumption that there is an arraignment of class against class, and encourages a return to private endeavor.

There are so many things that are hampering a sane economy that it is time to address ourselves to basic facts.

The following letter just received is further evidence that advertising pays. It is also gratifying evidence that the MANUFACTURERS RECORD is read from cover to cover.

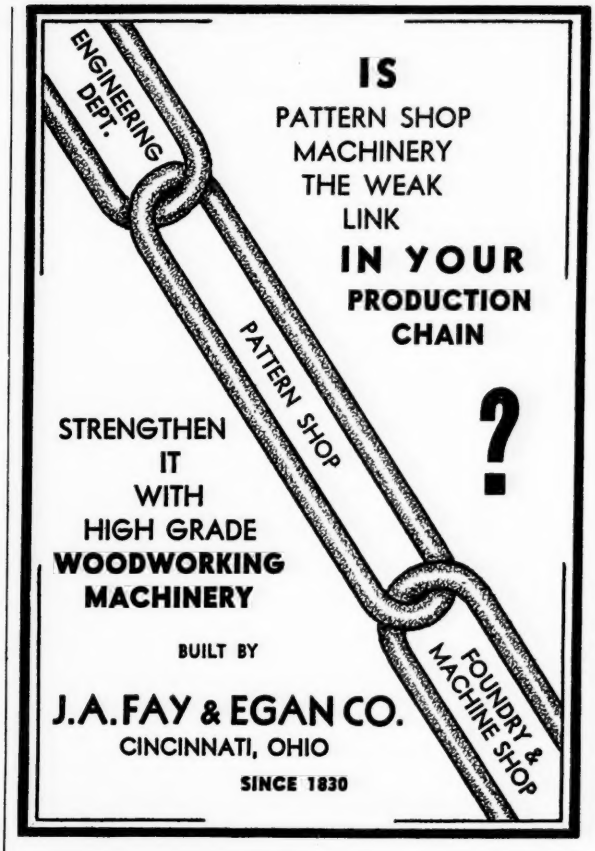
MANUFACTURERS RECORD
Baltimore, Maryland.
Gentlemen:

Thank you for your letter of February 22, 1943 concerning the advertisement, "What did you do today for Freedom?", which you so generously printed in your February issue. Within a week we shall send 1,000 reprints of the page to Mr. Douglas Tompkins, Assistant Manager, Mayfair Cotton Mills, Arcadia, South Carolina.

Mr. Charles H. Murchison, Director, Fourth Civilian Defense Region, Candler Building, Atlanta, Georgia, is also being requested to provide Mr. Tompkins with a supply of the booklets, "You and the War."

This instance evidences the real value of your contribution in furthering civilian defense.

Faithfully yours,
James M. Landis, Director,
Office of Civilian Defense, Washington, D. C.

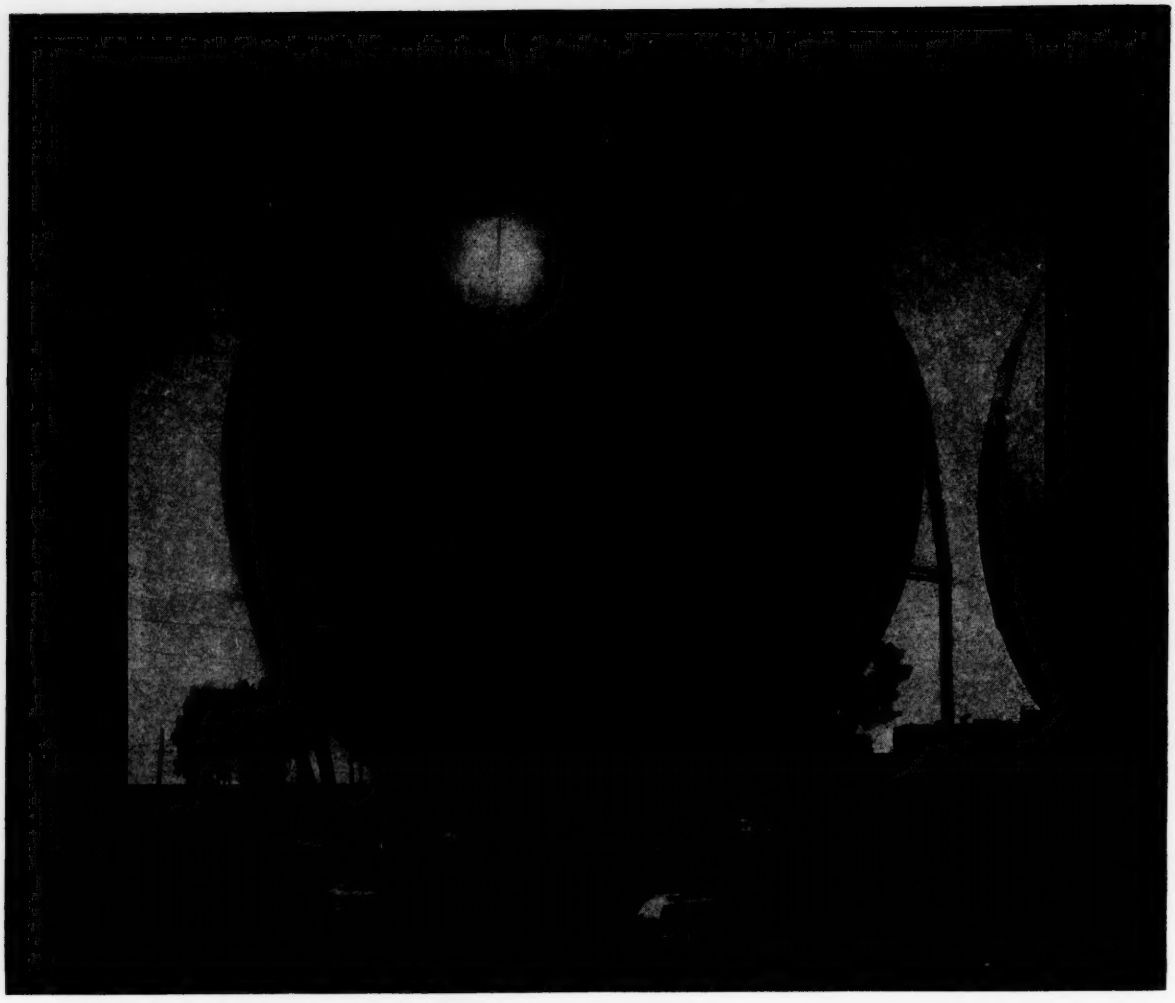




FIRST SQUADRON ARMORY, PHILADELPHIA, PENNA
6,000 SQ. FT. WHITE CORRUGATED WIRE GLASS SKYLIGHT

SPECIFY
ORIGINAL SOLID CORRUGATED
WIRE GLASS SKYLIGHTS

PENNSYLVANIA WIRE GLASS CO.
1612 MARKET STREET
PHILADELPHIA, PENNSYLVANIA



HORTONSPHERES... FOR *Storing* ESSENTIAL GASES

MANY of the problems encountered in the handling and storage of gases for chemical and industrial production are readily solved by the use of the Hortonsphere.

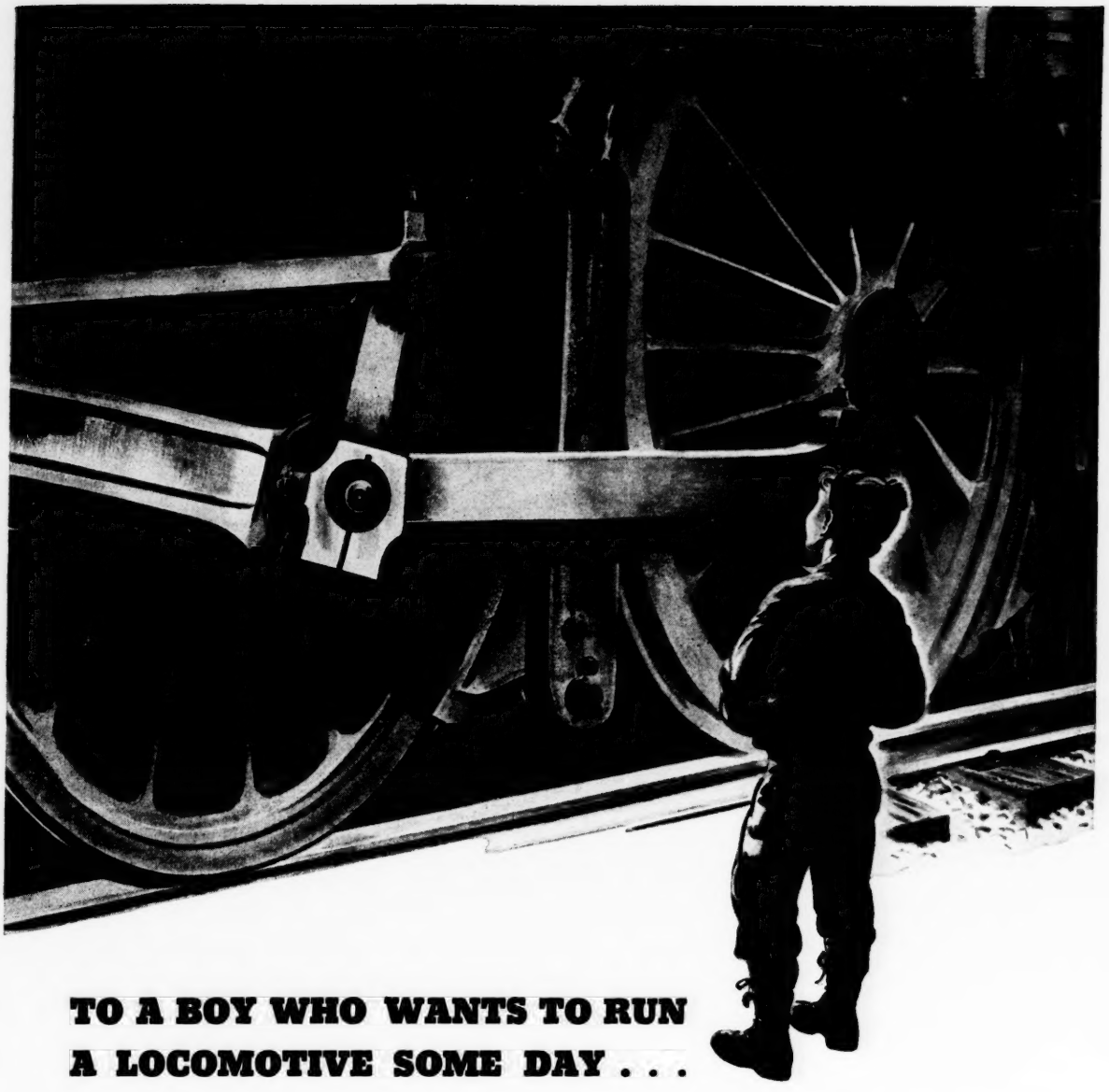
For example, one manufacturer using illuminating gas for heating and sealing burners on a complex, automatic machine encountered excessive spoilage because of variations in Btu content of the gas. By installing a Hortonsphere for storing the gas, he was able to mix the incoming gas with that already in the sphere, thereby providing an adequate supply of gas with a uniform Btu content. Also through use of the Hortonsphere, sufficient gas for an entire day's run could be mixed and stored during the night.

Other profitable Hortonsphere installations have been made to permit the manufacture of gases during the night when power rates are lower, storing the gas for withdrawal during the day. Illustrated is one such Hortonsphere, used for the storage of nitrogen.

CHICAGO BRIDGE & IRON COMPANY

Birmingham .....1530 North Fiftieth St.
Houston .....5614 Clinton Drive
Tulsa .....1611 Hunt Building
Greenville .....York St.
New York .....3313-165 Broadway Bldg.
Cleveland .....2216 Guildhall Building
Chicago .....2106 McCormick Building
San Francisco .....1040 Rialto Building
Philadelphia ....1619-1700 Walnut Street Bldg.
Havana .....402 Edificio Abreu
Washington .....330 Bowen Bldg.

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.



TO A BOY WHO WANTS TO RUN A LOCOMOTIVE SOME DAY . . .

SURE you can be an engineer when you grow up! Or a policeman or a doctor or anything else you want to be.

Because you're going to live in a *free* world, son . . . where a fellow can work at what he likes, live where he wants, go to church when and where he pleases.

Day and night, powerful locomotives on the Southern Railway are working to make this better world for you . . . hauling train after train of fighting freight and fighting men toward the battle fronts of Freedom.

And when Victory is won, these mighty "engines of war" will be enlisted by the Southern to help win the Peace, too! Then they will haul textiles from the South's modern mills to clothe a war-worn nation . . . food from fertile Southland fields to feed and nourish all free men.

They will haul paper and pulp, coal and cotton, oil and ore . . . all the riches of a great *new* South that will help make this victorious nation a place where *your* boys and girls can grow up in peace and freedom.

Ernest E. Norris
President

SOUTHERN RAILWAY SYSTEM

The Southern Serves the South



WE HAVE THIS TO SAY ABOUT WOOD

What's being done with wood today would make Chippendale turn over in his grave.

The oldest construction material is stepping out in the younger, faster company of the metals. We urge you to watch its strides. It is going places.

Perhaps the new capabilities which have been given to this familiar friend will help you to meet the challenge of providing your share of the 55 million jobs that are going to be needed when this war is over.

Here at Alcoa we are convinced that the more of the new materials you look at, hard, the more your imagination will be stimulated for the future.

We mean that. Imagineering is the only product we have to sell you, and Imagineering plays no favorites.

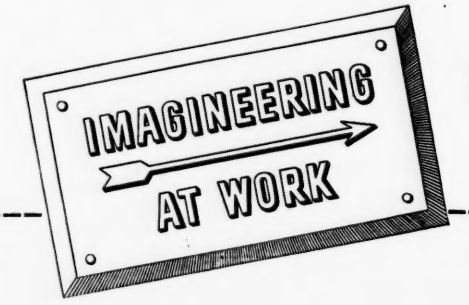
We would rather have you let your imagination soar, and come down with wood for the answer, than have you do no Imagineering at all.

Of course we would much rather have you come down with Alcoa Aluminum for the answer, and the chances are that you will in more cases, and in more directions, than you have dreamed of, if you haven't taken a good square look at the economics of Alcoa Aluminum, *as of today.*

Even if you are fabricating some form of Alcoa Aluminum on war work (*and who isn't these days?*) you can't know the half of all the cost story and fabrication story that makes Alcoa Aluminum the newest material there is.

There *is* a realm for Imagineers.

ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.



Alcoa Aluminum

ALCOA



Out there somewhere is a monument to an American soldier — a pile of rocks . . . an empty gun . . . an empty helmet.

He was young and strong — eager and willing to fight for his country. He did fight . . . bravely.

But for the want of bullets . . . or planes . . . or tanks — he lost his life. He didn't understand . . . he didn't know . . . that accidents of carelessness and inefficiency back home . . . cost him his life. He didn't know that since this country went to war accidents have caused the loss of more than 500,000,000 man-days of labor . . . lost forever for making the bullets and building the planes and the tanks that could have saved his life — and the lives of his comrades.

Accidents are a deadly enemy that prolong the war. Saving or losing a day, an hour, or even a minute on the production front, means life or death to those on the battle fronts.

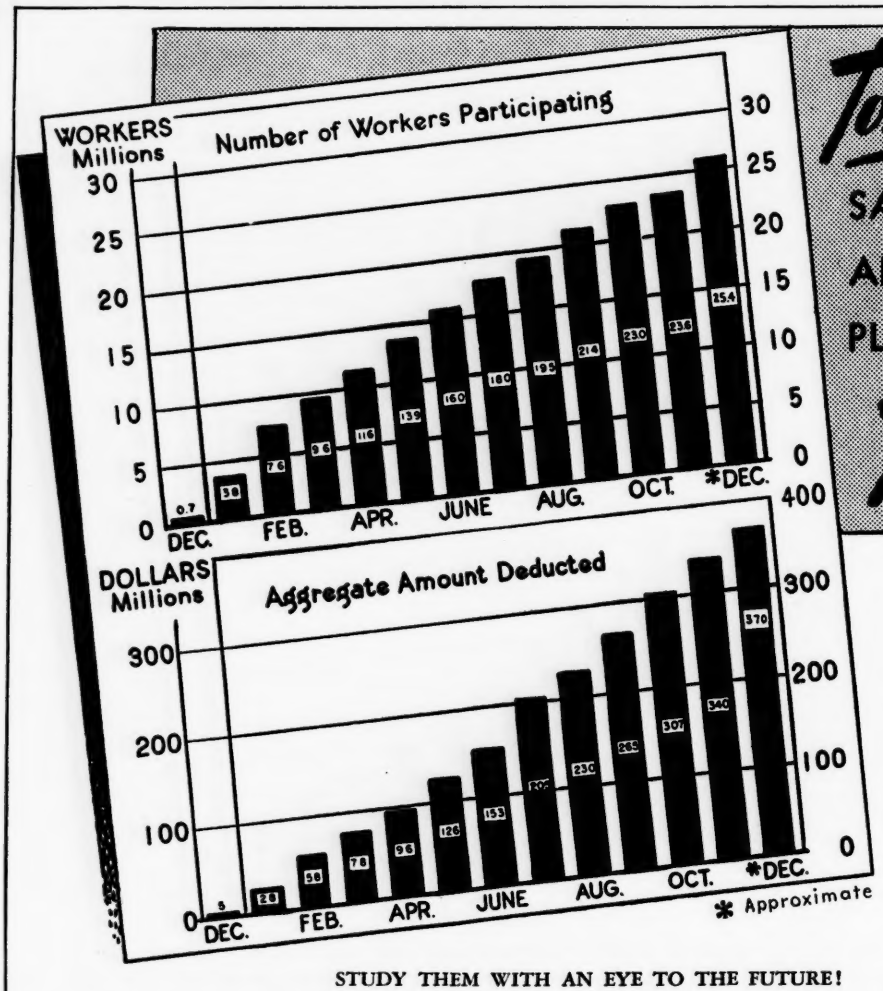
Accidents are caused. They can be prevented. Because the Norfolk and Western Railway knows from long experience that this is the literal truth, it has wholeheartedly joined the nationwide accident-prevention campaign of the War Production Fund to Conserve Manpower. Started by American industry, and endorsed by the War Production Board, this campaign is raising $5,000,000 from business and industry to be used to finance a vast program of the National Safety Council — to protect America's war workers in the factory, in the home and on the streets.

Tonight, when you lie down to sleep, visualize the lonely monument of that American soldier. And solemnly resolve that tomorrow, you will go forth to work and live safely . . . to protect his comrades . . . to speed Victory and Peace.

Norfolk and Western Railway

PRECISION TRANSPORTATION

BUY U. S. WAR BONDS



Tomorrow's SALES CURVES ARE BEING PLOTTED . . . Today

THESE CHARTS SHOW ESTIMATED PARTICIPATION IN PAYROLL SAVINGS PLANS FOR WAR SAVINGS BONDS *(Members of Armed Forces Included Starting August 1942)*

STUDY THEM WITH AN EYE TO THE FUTURE!

There is more to these charts than meets the eye. Not seen, but clearly projected into the future, is the sales curve of tomorrow. Here is the thrilling story of over 25,000,000 American workers who are today voluntarily saving close to FOUR AND A HALF BILLION DOLLARS per year in War Bonds through the Payroll Savings Plan.

Think what this money will buy in the way of guns and tanks and planes for Victory today—*and mountains of brand new consumer goods tomorrow.* Remember, too, that War Bond money grows in value every year it is saved, until at maturity it returns $4 for every $3 invested!

Here indeed is a solid foundation for the peace-time business that will follow victory. At the same time, it is a real tribute to the voluntary American way of meeting emergencies that has seen us through every crisis in our history.

But there is still more to be done. As our armed forces continue to press the attack in all quarters of the globe, as war costs mount, so must the record of our savings keep pace.

Clearly, on charts like these, tomorrow's Victory —*and tomorrow's sales curves*—are being plotted today by 50,000,000 Americans who now hold WAR BONDS.

EVERYBODY EVERY PAYDAY AT LEAST 10%

Save with

War Savings Bonds

This space is a contribution to America's all-out war effort by

MANUFACTURERS RECORD

PERFECT SHIPPING MONTH

To be featured in the April 1943
MANUFACTURERS RECORD

The April 1943 issue of MANUFACTURERS RECORD will devote considerable space to articles in connection with the campaign featuring the month of April as "Perfect Shipping Month". This is in cooperation with the Association of American Railroads, the Railway Express Agency and the management committee of the Shippers Advisory Board.

Donald M. Nelson, Chairman of War Production Board and Joseph B. Eastman, Director Office of Defense Transportation, in issuing letters of endorsement, have thus given official recognition to the importance of this feature at this crucial time.

In addition, a special article will give the railroad point of view; another will feature air transportation; the record of railroad progress in claim prevention making specific reference to an article on this subject that appeared in the MANUFACTURERS RECORD when the Association of American Railroads was first established, and recently referred to by one of the officials of the Association as follows:

> ***"About the best article on loss and damage prevention I have ever seen was published by the MANUFACTURERS RECORD when we first came on the job, reflecting the 'horrible' conditions existing at that time, when our claim payments were around 100 million a year; I am confident that the April issue will be one of the smash hits of the campaign."***

Other articles will feature the truckers point of view; also the materials handling and packaging arrangement worked out by the Federal Government for conservation of space and materials for the ample protection of contents whether explosives or perishable products.

The April issue will be published March 31st and the latest date to receive advertising plates without showing proofs, is March 24th; March 17th, if proofs are required.

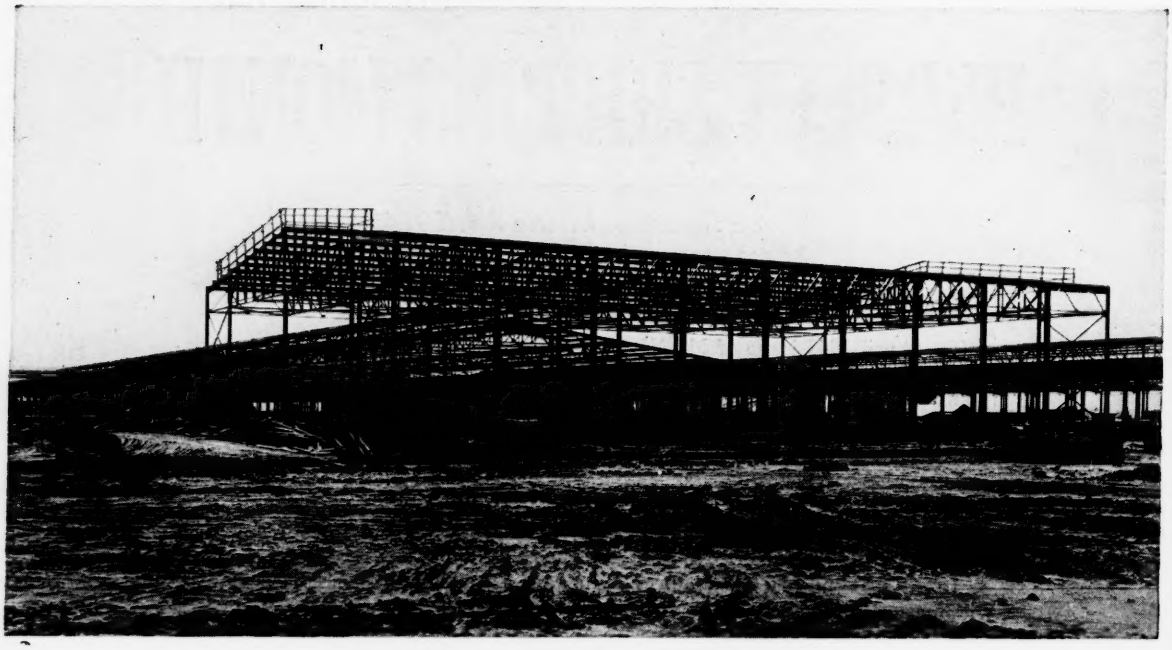
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You are challenged by Donald Nelson's recent statement that "Production goals for 1943 will not be met unless we surpass present production levels." To help you solve three of today's most difficult business problems, the George S. May Business Foundation reports on "Supervisory Training," "Transportation," and "Womanpower."

An almost national lack of well-conducted supervisory programs is indicated by a survey of 15,000 representative companies. Foundation Report No. 134, titled "Industry's Report on Supervisory Training," *can be read thoroughly in 15 minutes,* to your advantage.

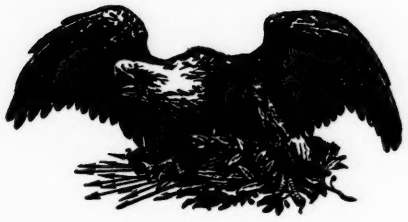
A vital part of our wartime transportation system is the interstate network of trucking lines. Foundation Report No. 135, "New Bottlenecks For Old" is an analysis of a large trucking company. In *twelve minutes reading time,* it tells you how these transportation problems were solved.

The effective employment of women has become a must industrial problem. In response to many requests we have prepared in Foundation Report No. 136, titled "Womanpower," a comprehensive digest of facts and references on this most timely subject.

Copies of these up-to-the-minute reports are mailed without charge when requested on your business letterhead. A list of preceding reports will also be sent you.

THE GEORGE S. MAY BUSINESS FOUNDATION

111 S. Dearborn Street	320 Bay Street	122 E. 42nd Street
CHICAGO	TORONTO	NEW YORK



To be or not to be

Individual freedom—the right to do things for oneself—is a greater human right than social security. Slaves had social security. They had a place to live, clothes to wear and food to eat.

Governmental social security means only one thing, that the people are the wards or slaves or whatever you want to call them of the state. That they are no longer the masters of the state but its servants. That instead of being freemen they are bondsmen and that they are bound for life.

Any government can only distribute to its people what they first create. Distribution of poverty will help no one. Distribution of poverty faces all of us if the incentive of individual initiative is destroyed.

Any nation will starve unless a majority of its people have the individual ambition to want to work, to want to better their positions in life for themselves and their families, to want to work for the pure joy of personal accomplishment and the ability to help voluntarily those who are less able or fortunate.

Though we have seen the hand writing on the wall we are still a free people. Though we have felt the bit in our mouths we still resent every tug on the reins that trys to control us. If the pressure on those reins increases it is more than probable that we will take the bit in our teeth. If and when we do this there will be a runaway that will shake the present puny rein pullers out of their contemporary Roman chariots.

There is no political panacea for work. There is no political panacea for intelligence. There is no political panacea for integrity, nor is there for ambition, nor frugality, nor patriotism.

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(*Savannah, Ga.*)

Port Wentworth Corporation owns 2,500 acres of industrial and terminal lands available for war or peacetime plants. This area is served by our affiliate, the Savannah & Atlanta Railway Company. Many large corporations as well as the United States Government are cashing in on the advantages offered at Port Wentworth. Among plants or developments located at Port Wentworth or served by the Savannah & Atlanta Railway in the Savannah district are:

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ADVANTAGES OF PORT WENTWORTH

1. RAW MATERIALS—Agricultural and mineral
2. LABOR—Excellent type—white and colored
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PORT WENTWORTH CORPORATION

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INCOMPETENCE AT HOME

Giving full credit to the President as Commander-in-Chief and to our superb armed forces, both officers and men, it is to be regretted that they are grievously handicapped by the conduct of our domestic affairs. We believe these officers and men are the finest group that has ever been assembled under the American flag.

Why such splendid leadership and such brave execution of strategy and tactics should be handicapped by incompetence at home is the reason that we cannot applaud, as we would gladly do if possible, the conduct of our domestic efforts.

Bureaucracy by puerile novices is rampant not only in Washington but wherever the tentacles of bureaucracy spread. It harasses the business man, farmer, professional man, laborer and everyone with whom it comes in contact. It absorbs hundreds of thousands of men and women who could otherwise perform useful duties, and prohibits men and women who are trying to perform those duties from performing to their full capacity.

These Bureaucrats are not the career men in the various departments in Washington. They are men who through political influence are able to override the opinions of those who have made their life's work a study of the proper relationship between government and business and farming and labor. They think that they have attained the stature of Goliath. Where is David with his sling? It seems to be unfortunate for all of us working for a way of life in which we believe, that we haven't been able to find a David, but that what we have found instead is a Jacob, who is interested in scheming to secure his brother's birthright in order to have it for himself.

In our opinion it is necessary for Congress to represent the people of the United States. It is essential that each individual Congressman represent not only the opinion in his own district, but the opinion of the people as a whole. It is necessary for the morale of our people at home and abroad that they be made to feel a sense of confidence that what they are striving and fighting for is the personal freedom for which their Government stands.

We elect the Nation's representatives. We elect a Chief Executive and his Vice President. We do not elect the three million office holders who have been appointed. Most of them now seem to think that they control our lives. We question their authority. We question their ability. We certainly question the wisdom and effect of their published words.

It seems to us that Congress must lead in restoring and preserving the structure of our way of life and that the President should devote his thoughts and time and energy to being the Commander-in-Chief of our Nation at war.

THE 1943 SLACKER

All wars prior to this one were fought primarily by men under tactical command. This war is being fought by machines with expert technical soldier operators.

This is a war that demands machines as much as it demands the trained men to operate them. This is a war where the production of the fighting equipment is as essential, if not more essential than the men who use the equipment in active combat.

We are told daily that we are faced with an industrial man power shortage, yet men who should be glad to work six days a week for the preservation of their homes, their families, and their country are not doing so because they are making more money than they ever made before in their lives, and knowing that, selfishly feel that they can take a day off any time that it pleases them to do so.

These men realize that they cannot be quickly replaced and that there is little danger that they will be discharged. As a result of this state of mind they loaf on their jobs, complaining to their Unions if they think their easy work is going to be made an honest day's work.

These men are to be seen in shipyards, in mines, in manufacturing plants of a number of different kinds. They are SLACKERS. Each one of them may be the cause of the death of our boys on the fighting front. There is no excuse for them or any organization that supports them.

A construction project near Baltimore had a red lantern burning at a ditch dug less than five feet into a road that was not a main thoroughfare. This road was perfectly straight for at least 100 yards on each side of the ditch. The road was wide enough, in spite of the ditch, for cars to pass each other going in opposite directions. This ditch was guarded, in addition to the red lantern which was still burning, by two men with red flags whose duty it was apparently to hold up traffic so that they could collect their day's pay. Why, if there is a manpower shortage, weren't these men doing useful work? Observant people can cite many such absurd and wasteful cases of a similar character.

Why do not Petrillo's musicians go to work at productive jobs? Why does John L. Lewis restrict regular mining hours to 35 a week? Why do labor leaders in general encourage their members to stay members of their unions, rather than join the Armed Forces, or to transfer to more important jobs in their industries?

Why does Washington talk man power shortage when it tolerates labor conditions, which, if corrected, would solve the shortage in the democratic way? Are the men who have civilian jobs, to be coddled by their government because their work is of vital importance, and be permitted to enjoy the fruits of a war paid by for the young fellow in a plane, on a ship, or in a fox hole?

UNITED STATES IRON ORE RESERVES

IRON ore shipments in 1942 established a new peak for the second consecutive year and record-breaking demand can be expected for the duration. The marked acceleration in the exhaustion of merchantable ore, particularly Mesabi open pit ore, again has brought to the foreground the question of the life of Lake Superior high-grade ore reserves, and those of the entire nation.

Iron Ore Reserves

Total reserves of iron ore, including both low- and high-grade ore, are tremendous, but concern for the moment is with the quantities of standard ore remaining. Although even the lowest estimate of reserves does not leave the country without iron ore deposits, the expense involved in manufacturing high-grade ore when high-grade reserves are exhausted must be considered.

Estimates of reserves of the Lake Superior district on January 1, 1942, as given by E. W. Davis* in his official report show * * * total supplies * * * amounted to 1,292 million gross tons of which only 569 million tons, or 44% was, however, open pit direct ore. Nearly 90% of all these estimated reserves are located in Minnesota. Reserves in Michigan are placed at 132.3 million, or 10% of the total for the district. Reserves of Wisconsin are estimated at 5 million tons, or the same as in 1925, although some fluctuations occurred during the intervening years. The long term record of reserves of Minnesota and Michigan shows that the total for January 1, 1942, was 391 million gross tons less than at the beginning of 1916. Of that decline, the Mesabi range accounted for 312 million tons. Thus, the average annual decline in estimated reserves in Minnesota and Michigan for the 26-year period has been only 15 million tons.

In appraising the January 1, 1942 estimates, Mr. Davis observed that "* * * it is to be expected that these figures will be found to be conservative, and the actual tonnages that will eventually be secured from the various districts will be in excess of these estimates. This excess is not expected to be large, however—perhaps in the order of 10% * * *"

Some other estimates make more liberal allowance for future additions to supplies. While frequently expressed in terms of life expectancy, which also involve estimates of future demand, estimates of reserves running up to 30% or more in excess of tax commission figures cannot be ignored. Not all properties are fully explored and as tax estimates are restricted to ore of present value, technological and other changes may permit the mining of some ore now classified as non-merchantable. The comment has been made, however, that even if the highest of present high-grade ore reserve estimates are accepted, the long-term problem is not significantly altered.

Reserves in the Michipicoten district in Ontario, which falls within the Lake Superior region, are estimated at 60 million tons of iron carbonate. The mine product, however, requires roasting before it can be used as it has a rather high sulphur content. A magnetic-iron formation exists in the Moose Mountain district of Ontario. This ore must be beneficiated and no shipments have been reported since 1924. The most recent development is a project to drain Steep Rock Lake near Atikokan in order to make available a large body of high-grade ore under the lake. One million tons of ore are expected to be obtained from this ore body in 1944, double this rate in 1945 and further expansion in subsequent years.

Reserves in Southern Regions

Alabama, the major ore source outside the Lake Superior district, is estimated to have supplies for several hundred years to come, amounting to about 1½ billion to 2 billion tons. Large quantities of ore currently listed as "unavailable" or submarginal also exist. While activity has risen to new

*E. W. Davis is director of the Mines Experiment Station, University of Minnesota.

Iron and steel production, so essential in war and in peace, is one of the South's oldest industries and one that has been growing in importance throughout the years. An indication of what this industry means to the South today may be gauged from the fact that there are over 40 blast furnaces and 18 steel plants actually in production besides several others in course of construction. Annual capacity of the operating furnaces closely approximates ten million tons, while the steel ingot capacity is nearly twelve million tons. Production of hot rolled iron and steel exceeded nine million tons in 1942 and pig iron output was close to nine million tons.

Like the majority of the South's industries, its iron and steel production is based upon the proximity of raw materials; iron ore, limestone and coal being available in ten of the sixteen southern states, and iron and limestone alone in two others. The Birmingham district of Alabama the world where iron ore, coal and is recognized as the only place in fluxing materials abound in sufficient quantities for commercial production within such a limited area.

It is understandable therefore that the matter of this country's iron ore reserves is of considerable importance to the South.

The article presented here is comprised of extracts from a survey, "United States Iron Ore Reserves," recently completed by the National Industrial Conference Board and expressly made available to the MANUFACTURERS RECORD.—*Editor.*

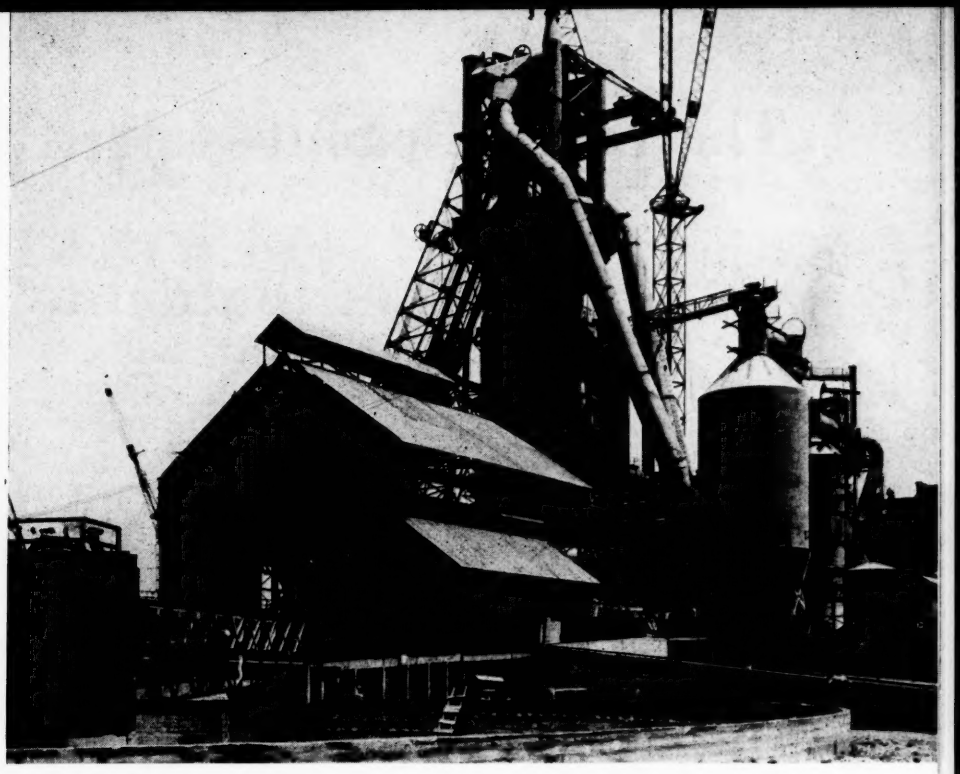
high levels, the Leith and Liddell report observed that "conditions in the Birmingham district are such that no great increase in the rate of mining is expected. The mining is mostly underground and sudden increases like those possible in Lake Superior are here impossible. On the other hand, Birmingham is exceptionally well situated to maintain its present industry. Its coal, iron, dolomite, and limestone; its plentiful supply of labor; and its location at the heart of the southern market seem to assure it the place it now occupies in the steel industry as far ahead as it is possible to imagine."

Reserves probably available in the Tennessee River basin were estimated at nearly 120 million tons by Burchard in 1927. Leith and Liddell accepted that estimate as also representing conditions in 1935 as new discoveries since 1927 had "just about kept pace with depletion." They also reported that reserves in other southern states were "probably on the order of 500 million tons" but that "most of this must be classed as unavailable and unlikely to become available for some time to come."

The only active mines in central and midwestern states are located in Missouri. Missouri's output, however, dropped sharply in 1941. According to Leith and Liddell, "the siderite deposits of Ohio, West Virginia and northeast Kentucky, while extensive, are no longer considered of any importance." "Nearly available" ore which can be mined as an open cut and magnetically concentrated exists in northeastern Iowa. Many years ago, Howell estimated reserves at 10 million tons.

Summarizing the situation in western states, Leith and Liddell reported that "Iron ore deposits are known in thirteen of the states west of the Mississippi Valley, however, in most of these the deposits are small and remote and cannot be considered as important. The reserves, the more available of which are chiefly magnetites, are probably on the order of a total of a billion tons, most of which are rather doubtfully available or definitely not so."

The most recent estimate cited of reserves in Texas is 200 million tons, although earlier estimates placed them as high as a billion tons. Production, however, has been insignificant.



One of the newest of the South's blast furnaces now numbering more than forty and with an annual capacity close to ten million tons.

Iron Ore Shipments

The Lake Superior iron ore industry's achievements in meeting the tremendous demands imposed by the war have been truly outstanding. In the year just closed, the industry shipped 92.1 million gross tons of ore by lake and an additional 1.3 million tons (partly estimated) by rail. This record of 93.4 million tons compared with 81.2 million tons in 1941, the previous peak and was 3 million tons in excess of the goal set at the beginning of the season. Compared with 1939, last year's shipments showed a gain of 105% while the increase over the low point in 1932 was 2,500%. The exceptional performance of the industry is illustrated by Chart 2. Prior to 1941, the highest level attained by the Lake Superior region was 66,903,000 tons shipped in 1916. In 1929, that record was almost equaled when shipments totaled 66,157,000 tons.

The 1942 record, moreover, is destined to be broken this year. According to estimates by the Steel Division of the WPB, demand for lake ore will be slightly in excess of 100 million gross tons when the iron and steel expansion program is completed by mid-1943. Some estimates place next year's requirements as high as 104 million tons. Other producers are expected to furnish slightly less than 20 million tons, or about 17% of total requirements. That is a higher proportion than obtained in 1942.

Consumption of ore from all sources at the present time is placed at slightly below 9 million gross tons a month, an annual rate of approximately 107 million tons. Steel needs for pig iron, which at the beginning of 1942 were running at the annual rate of 51.7 million gross tons, had reached 54.2 million gross tons at the close of the year and will total 61.4 million gross tons when the expansion program is completed.

Total shipments of iron ore by United States mines were estimated at 107 million gross tons in 1942 by the Bureau of Mines, as compared with 93 million gross tons in 1941, an increase of 15%. Mines outside the Lake Superior district shipped 14.9 million gross tons, as against 13.5 million gross tons in 1941, an increase of only 10.5%. Their proportion of total United States shipments declined

(*Continued on page 57*)

The Lowly Peanut—

Its Contribution to Oils and Fats

IT looks as if the peanut is likely to become what has often been predicted for it—one of the country's most important crops. This is more apparent now because of the present acute situation wherein there is a marked shortage of vegetable oils and animal fats.

Victor Schoffelmayer, an agricultural authority of the Southwest, writing for the *Wall Street Journal*, points out that with the help of the soybean which he terms another "agricultural Cinderella" the peanut will stave off an acute national shortage in the field mentioned. This shortage is given as the reason for the peanut's sudden achievement of economic rank, but as the writer says it has other facts in its favor.

Quoting from Mr. Schoffelmayer's article:

"It will grow on land in the South taken out of cotton production; it can be crushed in mills already built to process cottonseed; as a food it tops the whole vegetable list in most key foot values, including vitamins B_1 and B_2; as an industrial product its oil is readily replacing other oils (cocoanut for instance) that are now scarce or unobtainable. Dixie is processing this season a record-breaking crop of 140 million bushels of peanuts. More than four million acres were harvested in a region extending from Virginia and the Carolinas to Texas. Although a million acres below the Government's goal (which has again been set at five million acres for 1943) the planting of peanuts this year slightly more than doubled the previous acreage peak, 1941. Counting subsidy payments to farmers for taking cotton land out of cotton production, the 1942 peanut crop is fetching the farmers a neat $200 million.

"The United States is the world's greatest consumer of fats and oils.

"The most recent authentic estimates are for 1941. They show that this country used slightly more than six million tons of oils and fats. Of this total four million tons were eaten in one form or another. One million tons went into soaps and cosmetics, 600,000 tons went into varnish, paint and lacquer, linoleum and printing inks, and 400,000 tons were used in waterproofing, rubber substitutes, and lesser industrial uses.

"Although the case of vegetable oils is not as critical as that of rubber, nevertheless, at no time has the United States been self-sufficient. Most imported oils were of tropical origin.

"These imports included coconut oil, palm oil, tung oil, cotton oil, olive oil, sesame, babassu, oiticica, rape, soybean, peanut, perilla, corn and sunflower oils, to say nothing of flaxseed, copra, castor beans, poppyseed, hempseed, palm nuts and less well known materials. The total in a typical year ran to 3,400 million pounds or nearly 1,500,000 tons.

"These figures show the extent of the deficiency with respect to vegetable oils, for Japan's attack practically stopped further large imports, and ships are scarce even in areas not directly affected by actual hostilities.

"This turned the spotlight on the peanut, rich in oil. Secretary of Agriculture Claude R. Wickard was quick to include it in the 1942 crop production goals—the greatest ever set before the farmers of any country—along with the soybean.

"Up till 1920 the South planted around one million acres to peanuts, a large portion of which were "hogged down" by the farmers' pigs, producing in the main a soft pork that did not find favor with packers.

Peanut Processing Industry

"A considerable peanut processing industry, however, had come into existence, the principal product being roasted and salted peanuts of the Jumbo type of the Southeast, as well as the small Spanish variety grown in Texas and other Southwestern areas, peanut oil, peanut butter, and an exceptionally high-percentage-protein meal, which was fed to livestock at first, and later developed into a human food.

"When Secretary Wickard asked farmers to plant five million acres to peanuts, that was more than double the acreage of recent years. Because of indifference, misunderstanding, price dickering, lack of the right equipment, and unfamiliarity in many areas of the Southwest, the final checkup shows that only 4,187,000 acres were planted. But the South produced a grand total of nearly three billion pounds of peanuts—equivalent to around 140 million bushels, as compared with 210 million bushels for the soybean grown in the North.

"If all these peanuts would be crushed for oil it would give a total of around 500,000 tons of peanut oil. Of course, this is not the case, because of the large consumption of peanuts in other forms.

"But the mere fact that America is eating more peanuts means that people are getting more vegetable oil in their diet. It matters little how people get their fats and oils requirement. The greatly increased peanut crop results in larger consumption of peanuts in every accepted form, even to a larger share of peanut hogs in the poorer cotton and tobacco areas of Dixie. This will be reflected in better health of young and old, whites and blacks.

"Farmers of the South received from $82 to $134 a ton for their peanuts this season, or from around $1 to $1.50 a bushel.

"There was considerable dissatisfaction among growers because of the higher price ($134 a ton) to growers who had grown peanuts for years, as against the smaller figure for those who grew them for the first time during an emergency situation.

Southern Farmers' Interest Stimulated

"In order to obtain its goal of five million acres the coming season the Agricultural Adjustment Administration is willing to pay an average of $125 a ton for all peanuts grown, regardless. This is certain to stimulate wide interest among Southern farmers. In fact they are privileged to reduce their cotton acreage below the permitted area, and thereby gain additional credit for a corresponding increase of peanut acreage.

"Peanut oil is by no means a new product. Mixed with olive oil, it has long been one of the principal exports of France and Spain. Because peanut oil is bland—having no taste or pronounced flavor—it is used widely as basic food oil.

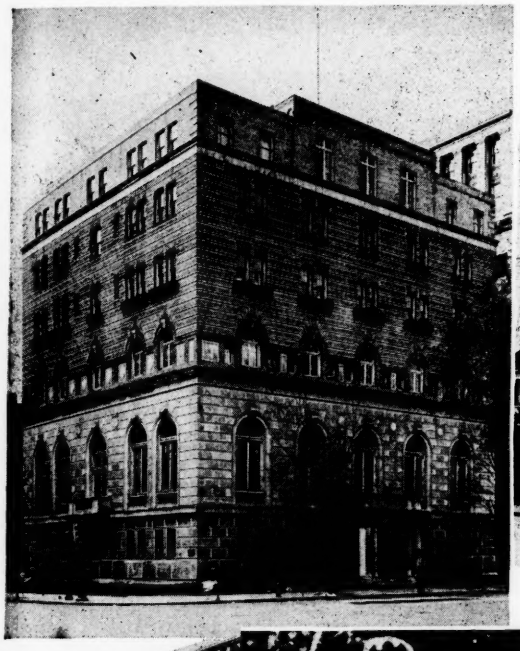
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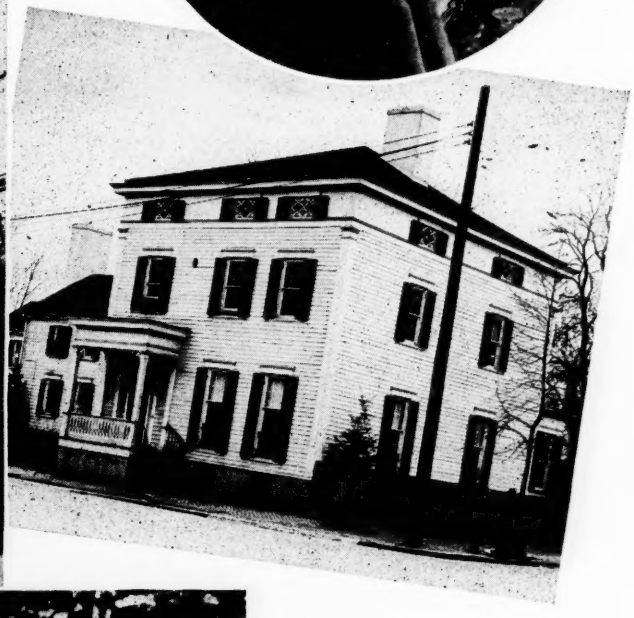
BONDS vs DUES

Men at work who produce the United Mine Workers' dues.



These dues were used to purchase—after Pearl Harbor, the union headquarters in Washington and are spent to maintain it in all of its present splendor.





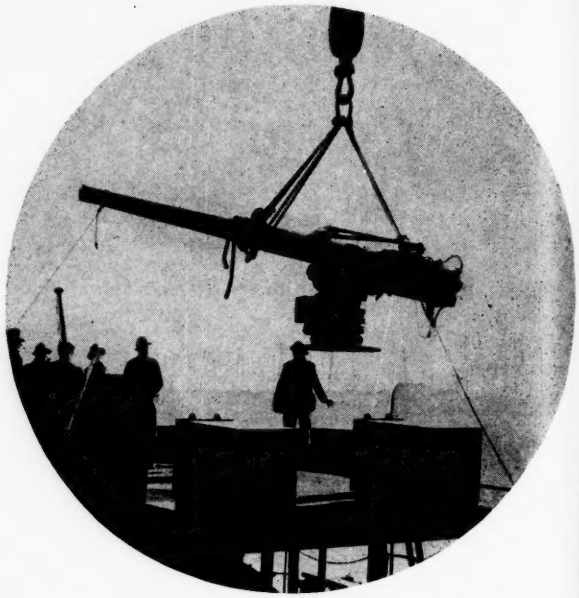
These same union dues pay the salary and expenses of the head of the union who lives in this spacious home in Alexandria, Va.



Why are they not invested in War Bonds to help the men plowing through the mud, in the face of an implacable enemy?

The answer seems to rest with the United Mine Workers.

"KEEPING THEM SAILING"



SPLIT almost in two by five terrific explosions off the Virginia Capes and condemned as a derelict by salvage experts, one of the world's largest tankers is again operating at sea after a comparatively brief period in one of the ship repair yards on the Atlantic Seaboard.

The forward section of this tanker was practically unharmed while the 300 foot after section, containing the propulsion machinery rested on the bottom in 32 feet of water. After cutting through the few remaining plates and strength members holding the sections together, the forward end of this vessel was towed to port. The stern section was finally raised after a most difficult salvage operation. At the ship repair yard the two sections were welded together and the ship again placed in a seaworthy operating condition.

This is just an example of what the ship repairing industry of this country is doing to "keep them sailing." The large expansion which the shipbuilding industry has experienced has been paralleled in the ship repairing industry. To meet the work load, the number of workers in ship repair yards has been increased over 400 per cent since 1940. Hundreds of vessels have been armed with anti-submarine and anti-aircraft guns and have been provided with quarters for the gun's crews. In addition to this 31 sabotaged Italian and German vessels that were seized in our ports were repaired and equipped for war operation at a cost of about $10,000,000. Sixty-five foreign-flag vessels that were requisitioned by our government were also armed and placed in good operating condition as well as many of the 198 ships of the old laid up World War Fleet.

In virtually all of the larger ship repair yards vessels of this and other United Nations that have suffered torpedo and other war damage have been quickly repaired and returned to sea service. A total of 285 merchant vessels aggregating more than 3,000,000 dead weight tons have been acquired for the Army and the Navy. All of these vessels had to be converted in the ship repair yards of the nation for war usage as Army Transports and Naval auxiliaries. In addition to this over 800 small craft, including many of the private yachts in the nation, have been armed and converted into Naval patrol craft in the repair yards and the yacht yards.

In normal times this industry has had very little government work to do as most of the repair and alteration of government vessels in times of peace has been done in the government navy yards. Therefore, there was little opportunity for the industry to be prepared for this deluge of work, a great deal of which was of a character quite different from the usual commercial repair work done in the yards in normal times.

From time immemorial ship repair work has been sporadic and almost always has involved rush work because ships in harbor and alongside of docks do not earn money for their owners. In times of war, ships laid up for repairs also cannot deliver the sinews of war to the far-flung battle fronts. As the motto over the door of the office of the Coordinator of Ship Repair and Conversion says "—An idle ship is a crime against the public interest."

The principal difference between peacetime operation of repair yards and war time conditions is that under war conditions the work in the yards is almost constant due to the large number of ships damaged by action with the enemy and due to the large volume of ship conversion work necessary. Therefore, the ship repair yards of America are virtual beehives of activity, working continuously night and day to keep the ships of this Nation, and also of some of the other United Nations in an operating condition.

This terrific load of work was thrown on the ship repairing industry very suddenly in the middle of the year 1940 when the government first commenced taking over merchant vessels for conversion into troop transports and other types of naval auxiliaries. To this

Before this country entered the war the shipyards doing repair work had their hands full repairing damage to British and other United Nations' vessels. Then when the United States joined the other countries, one of the first large jobs was that of equipping all our merchant ships with guns. Above is shown the brief ceremony attendant upon the mounting of the first gun. [Official U. S. Navy photo]

large volume of work there was also added the repair work done on British ships under the lease-lend program, as well as the repair work necessary because of sabotage on foreign-flag vessels of enemy nations which were seized by this Government. How well the ship repairing industry of this Nation has been able to effectively meet the sudden and large demands made upon it is perhaps best attested to by a statement made by the Coordinator for Ship Repair and Conversion for the Federal Government, who said:

"The shipyards of the United States have completed repairs on 5,500 ocean going vessels in excess of 2,000 tons each. This represents a tonnage of more than one-half of the merchant ocean going tonnage of the world.

"Considering the importance of the work done on these vessels, it represents a volume of business at least six times the normal.

"In addition, there have been minor voyage repairs on an equal number of vessels outside of the shipyards and at their loading docks.

"The work performed in repair yards requires management and workmen of the highest order of skill in view of its variety, complexity and non-repetitive character. Shipyard management and workers have risen to the demands of their task—The ships have been promptly and efficiently repaired and valuable 'ship days' have been saved."

Some indication of the type of work being done by the ship repairing industry and the speed with which it is being accomplished can best be illustrated by citing actual examples. Security regulations, of course, will not permit the use of the actual names of vessels or the yards where the work has been accomplished.

During the summer of 1941, prior to our entry into the war, there were three Italian vessels interned in the port of Hampton Roads, Virginia. These vessels suffered considerable damage to the main and auxiliary machinery and main boilers due to sabotage by the crew. The main engine damage consisted of cracked auxiliaries, bedplates and cylinders. Such damage in normal times would have required the renewal of these parts. However, due to the urgent need of these vessels the repair yard was permitted to use bronze welding and the fitting of additional stiffening to compensate for the loss of strength in the damaged parts. This same condition was also true of the boilers and the auxiliaries. The extensive repair operations on these three vessels was completed in about 4½ months' time with a considerable saving of money and time due to the methods used by the repair yard.

A coal carrier suffered considerable damage due to a collision off the Atlantic Coast. Due to the urgent need of vessels of this type the repair yard worked two twelve-hour shifts continuously while the vessel was in drydock and the repairs were completed and the vessel undocked in the brief time of 12 days.

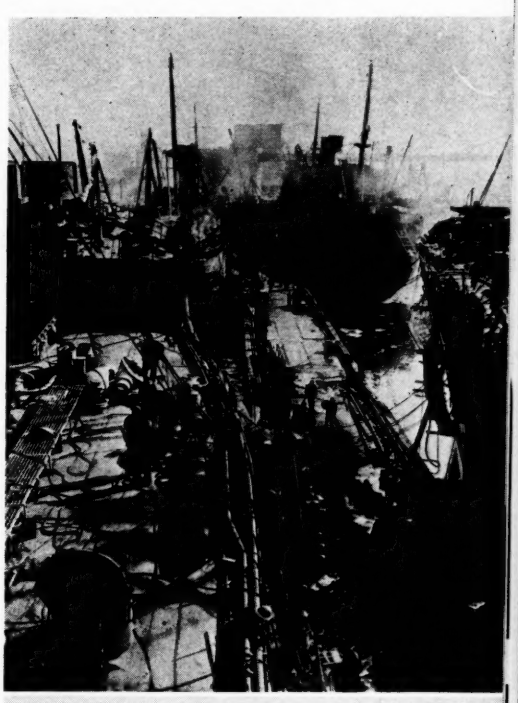
The value of the policy adopted by both the Maritime Commission and the Navy Department to duplicate main machinery installations in ships wherever possible to do so is illustrated by the story of a vessel brought to one of the Atlantic Coast repair yards that had been struck by a torpedo in the engine room. The force of the explosion completely demolished the main propulsion machinery. This yard, which is also engaged in building new ships, had in the yard awaiting installation in a new vessel, a duplicate of the engine in the damaged vessel. As the new vessel was not ready to receive the engine, arrangements were made to place this available machinery in the damaged ship so that this vessel could start immediate operations and an additional engine ordered in time to meet the replacement necessary for the new vessel under construction on the building ways.

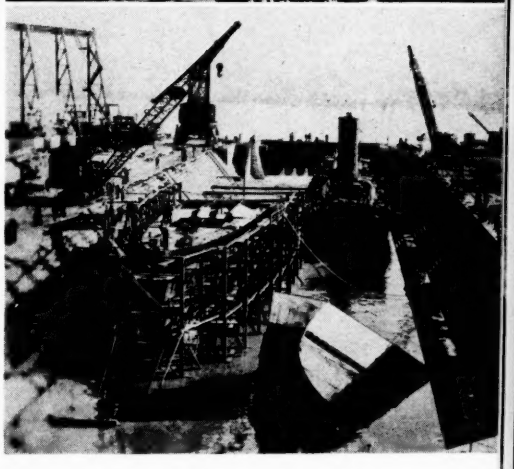
This is the saga of a Tanker. Hit by a torpedo fired from three points off her starboard bow, her bridge erection demolished, her forward tanks pierced, listing heavily, she was abandoned by her crew. The crew stood by for awhile, and when they saw the vessel was not sinking, they boarded her again, proceeded to get up steam—then another torpedo hit her fired from abaft the starboard beam, hitting the tanker aft the bridge, flooding her tanks.

The chief engineer stopped his engines and the ship was again abandoned. The crew floated in lifeboats all night and the next morn-

(*Continued on page 54*)

Ship repair yards are among the busiest places to be found in a nation at war. In the two scenes below are examples typical of such yards. The one on top shows a number of vessels undergoing repairs and having guns installed while the one below, truly illustrative of the fine work being done in these yards, shows the U.S.S. Shaw in drydock after she had been brought back to this country with a temporary bow. The latter can be seen in the foreground while the drydock is being flooded to float the vessel into position for joining with a new bow section still surrounded by scaffolding. [Official U. S. Navy photos.]





COAL—a product of countless uses

UNITED States bituminous coal production for the year 1942 reached an all-high record of 580,000,000 tons, of which the South's contribution amounted to almost 47 per cent.

Coal, one of Nature's most common raw materials, is potentially richer in rubbers than all of the islands of the East; more bountiful in fibers than all the Japanese silkworms; wealthier in colors than the rainbow; and abounding in curative medicinals.

Known to most as fuel, coal is scarcely appreciated, except by a few, as an almost inexhaustible storehouse of chemicals from which are synthesized many materials essential both in peace and war,—materials which formerly had to be imported. Upwards of 100,000,000 tons of coal will be chemically utilized in 1943.

In ordinary bituminous coal there are constituents of explosives for bombs, shells and torpedoes, plastics of many types including those of crystal clarity, solvents, food preservatives, insecticides, fertilizers, lacquers, "soapless soaps," literally hundreds of things vital to total war.

Coal is not poured into some giant bubbling test tube, over which a white-robed chemist waves a wand and adds air and water at intervals, and out of which comes neoprene synthetic rubber, nylon, fast dyes, TNT, light, crystal-clear plastics and sulfapyradine. It's not that simple.

"Made from coal" really means that one of several intermediates used in making a product is in turn made from one or more of the several derivatives of coal.

Since William Perkin, a young British chemist, made the first "coal-tar dye" 87 years ago, chemists and engineers have expended untold energy, initiative, imagination and funds in probing the chemicals derived from coal and in developing the processes and equipment necessary to their manufacture into useful products.

Bituminous coal heated in an enclosed vessel gives off volatile products and leaves coke as a residue. Both coke and the volatile products—such as coal gas, ammonia, benzol and toluol—today are used to make war necessities for many of which we formerly depended on foreign countries.

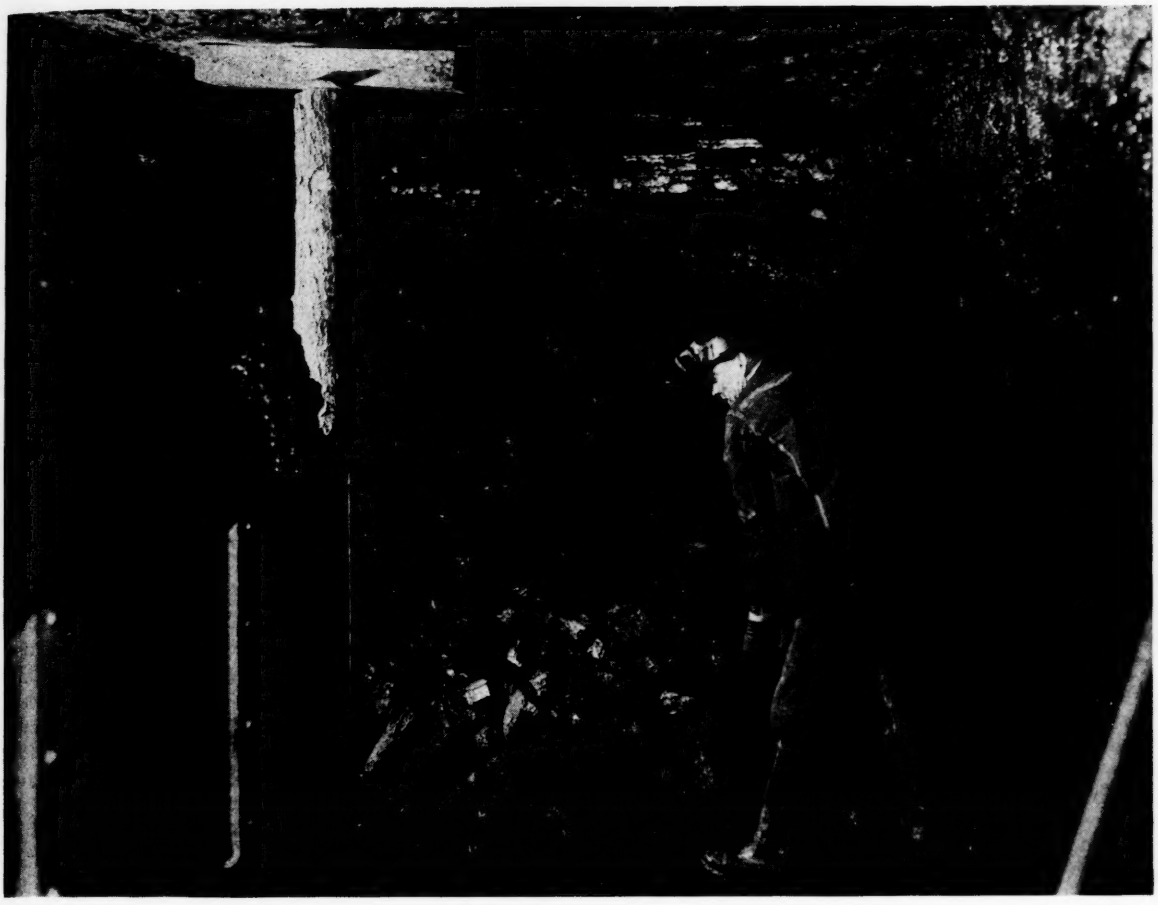
About 1.1 pounds of coal, for example, are chemically utilized to make each pound of neoprene, America's first satisfactory synthetic rubber-like material. Neoprene is so strategic in our war effort that it was one of seven materials, and the only non-metal, placed on the original priority list in 1941. Today it is carefully apportioned for tires on military vehicles, barrage balloons, airplane parts, shipboard cables to protect ships against certain mines, and other necessities. This child of coal is more than a synthetic rubber; it is a material containing rubber's desirable qualities and, in addition, superior properties of its own.

More than 270,000,000 tons produced in South in 1942 comprise almost 47 percent of nation's output

Nylon is derived from coal, air and water. Having higher combined strength and elasticity than any natural fiber, it has been used only for military purposes since February, 1942. Parachutes and canopy cloth, tapes, shroud lines and certain parts of the harness webbing and belting for parachutes take great quantities. Nylon rope is superior to any fiber rope on a basis of strength, lightness and durability. Exceptionally tough tire cords of this synthetic now are made experimentally. Tapered paint brush bristles, the first satisfactory ones ever made by man, and bristles for essential industrial and toilet brushes are nylon. They replace natural bristle formerly imported from the Far East. All nylon is needed for war now, but with peace there will come not only sheer stockings, but a host of new products fashioned from this versatile member of coal's family.

Although Perkin fashioned the first crude "coal-tar dye" in 1856, America still was importing more than 90 per cent of all its colors when World War I started. Our infant dye industry of 1918 now is a vigorous adult, furnishing to our armed forces fast dyes that will stand up under severe weathering and repeated washings. These dyes help to make our fighters the best-dressed in history and help camouflage man and munitions.

The pharmaceutical industry is to a large degree predicated upon coal-tar chemicals. The new sulfa drugs are an outstanding example. Among the most notable and helpful contributions to medicine in a century, today they are invaluable aids in decreasing fatalities among those injured in war. Their use on



Almost half the nation's bituminous coal comes from the South and nearly every one of the Southern states has deposits of varying size of this commodity, known to most people as fuel, but to the chemist as a virtually inexhaustable storehouse of chemicals.

burns at Pearl Harbor, against gangrene in wounds, and against epidemics of pneumonia and other diseases has been of incalculable importance. Atabrine, vital substitute for quinine in treating malaria, is another coal-tar derivative. Improved antiseptics and anaesthetics are also made with coal-tar chemicals.

"Lucite" methyl methacrylate resin, the crystal-clear plastic for transparent portions of military airplanes, stems from black coal. This is only one of the light but strong plastics, of which so much is expected, that come from coal and its derivatives. Another is polyvinyl butyral, formerly the plastic interlayer in laminated safety glass for automobiles but now the coating for Army raincoats, hospital sheeting, drinking-water bags and other war products. This plastic is replacing tons of precious crude rubber.

Originating in bituminous coal also are the phenol-formaldehyde and the urea-formaldehyde plastics. These plastics' war roles range from adhesives on plywood trainer planes and torpedo boats to soldiers' bugles, from insulation on electric wiring to gunstocks and radio antennae on airplanes.

Military explosives utilize coal. Toluol, an ingredient of powerful TNT for shells, bombs and torpedoes, comes either from coal or petroleum. Methanol, derived from coal, is a necessary raw material for the manufacture of certain military explosives, and coal is the source of aniline, needed for making the tetryl used as a "booster" in high-explosive shells.

The list of products partially or wholly derivable from coal and essential in the war includes:

Solvents, such as trichlorethylene, now used to clean metal parts of ordnance quickly and efficiently, and formerly available as odorless, non-flammable dry-cleaning fluids.

Anti-freeze to protect the motors of airplanes, tanks and trucks the world around.

Flotation agents which lift invaluable copper, zinc, lead, nickel, tungsten, chromium and other strategic metals from low-grade ore deposits once disregarded.

A new flame-proofing agent—ammonium sulfamate — used to treat clothes of workers in munitions and aircraft factories and foundries, and also to flame-proof insulating materials on ship's cables.

Acetate rayon, a useful war fabric, is made from cellulose and vital acetic acid, now derivable from coal. Lacquers, mildew inhibitors, leather cloth, moth repellants, fluids for hydraulic brakes, gum inhibitors for gasoline, wetting agents to facilitate

(Continued on page 57)

PLASTICS for SOUTH CAROLINA

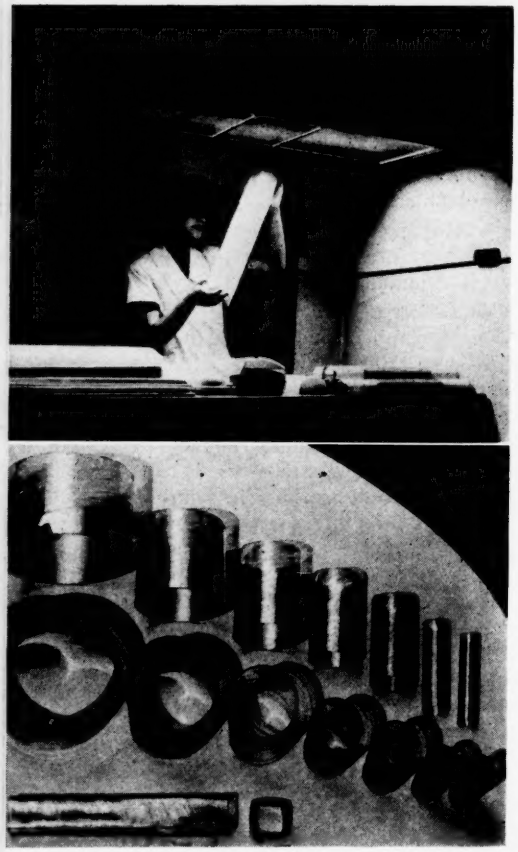
By

F. E. LAWRENCE
Director, State Planning Board
Columbia, S. C.

MODERN plastics have a thousand and one uses, and are playing an important part in the national war program. Not only are they used to replace many metals in the airplane and automotive industry, and for other army and navy equipment, but they are being used on a constantly increasing scale for many civilian consumer products in order to free strategic metals for armament and other defense needs.

In a considerable number of instances plastics are superior to metals. In other cases articles can be manufactured cheaper from plastics and yet have equal quality. In some cases plastic materials are both better and cheaper. There is a fast growing list of finished consumer articles that are of superior quality and that can be manufactured from the raw materials to the finished product at less cost with the proper plastic than with other known materials. Industries manufacturing such products will survive long after war activities and armament programs are concluded. There is no need to fear that the plastic industry will be short-lived and fold up with the war program. It is here to stay.

Modern plastics now on the market and in general use may be classified under several general groups, based largely upon the products from which they are derived. Of these, South Carolina has an abundant supply of the basic raw materials of all plastics of the cellulose base type. These include —cellulose acetate, cellulose acetate butyrate, cellulose nitrate, ethyl cellulose, and the lignin cellulose or wood plastics. Also suitable for production in South Carolina are the casein plastics from soybean protein.



The variety and uses for plastics is growing constantly. At left top is a fixture made from transparent "Plastacele" in combination with opaque louvers which sheds light directly on the object inspected and eliminates unwanted glare at the sides. Below is shown a variety of tubing known as spiral wound "Lumarith Protectoid" produced from 1/16" to 3" ID in varying wall thicknesses and particularly useful for the electrical industry.

The basic raw material required for the cellulose group is the cellulose content of cotton, cotton linters and wood pulp, including wood wastes and sawdust. Due to the present demand of cotton linters for explosives and other products requiring almost pure cellulose, plastics that can be made of wood and wood wastes are now in the most strategic position economically.

The plastic industry is grouped into two main divisions; first the manufacture of plastic material; and, second, the fabrication of this material into finished products. Fabricating plants for any of the plastics could be located in South Carolina and in many instances definite advantages would result.

Cellulose Resources in South Carolina

The cellulose resources of South Carolina, suitable for various types of plastics, may be divided into the following groups:

(a) Cotton and cotton linters
(b) Wood, wood pulp and wood wastes.
(c) Bagasse, straw, stalks and other agricultural residue.

Cotton is almost pure cellulose and for this reason cotton and cotton linters have been the favored type of raw cellulose for the cellulose base plastics. With the increased price of cotton and the tremendous demand for cotton linters for explosives, other forms of cellulose occupy an advantageous position. Normally, South Carolina is well situated with regard to the use of cotton as a plastic raw material.

Plastics From Wood Pulp

The wood pulps, especially the hardwoods, are better suited for high grade plastics than agricultural and miscellaneous wastes. Less expensive processes can convert them into cellulose plastics.

Valuable by-products are also obtained by the conversion. It would seem, therefore, that the hardwood forests of South Carolina could find immediate employment in this field.

Hardwoods are abundant and well distributed throughout the entire area of South Carolina, predominating in order of volume, Northern Coastal Plain region, Piedmont region, and Southern Coastal Plain region. A summary of the forest acreage in hardwoods indicates that about 2,900,000 acres in hardwoods are divided between the bottom land hardwoods of 2,200,00 acres and the upland hardwoods of about 700,000 acres. The bottom land forest contain a high percentage of old growth material.

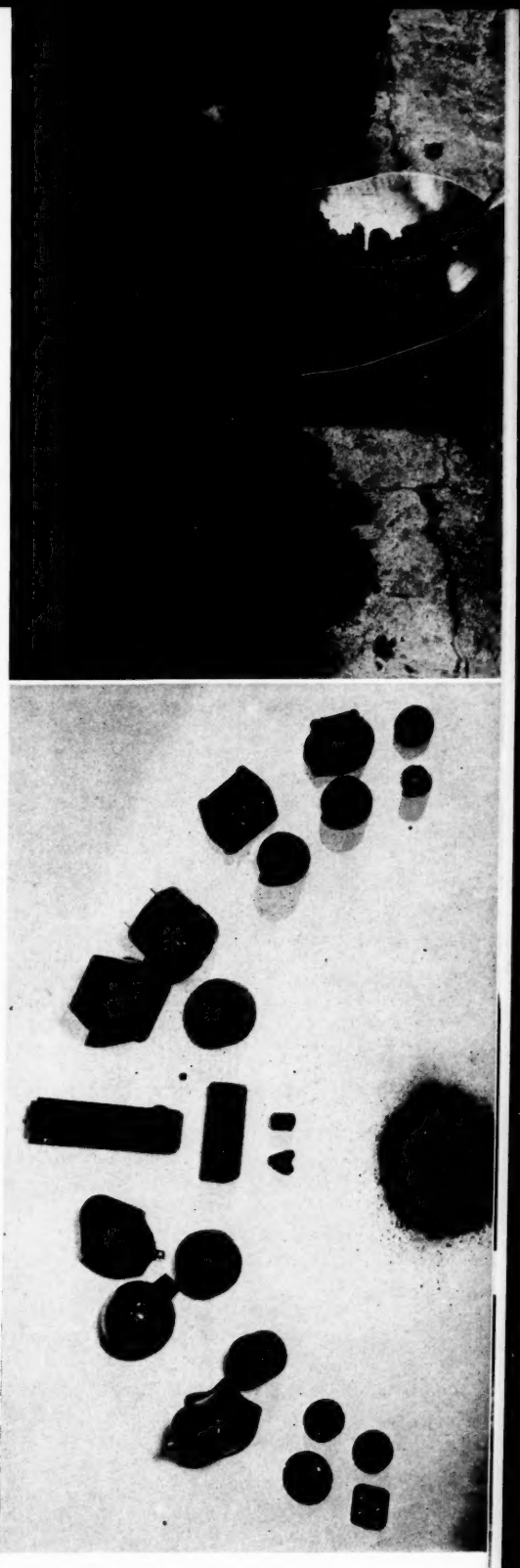
Plywoods, veneers and lumber require the larger trees. Plastics, made from pulp wood, can take the smaller sizes, which exist in large quantity and in all parts of the state, whereas the original growth mature hardwoods have been reduced to certain sections. Ample supplies of suitable material for plastics manufacture exist wherever hardwood forests are found.

A plastic operation in the vicinity of a plywood of hardwood lumber operation is of great advantage as tops and smaller growth are applicable for pulp wood, thus utilizing what would otherwise be wasted.

Alpha Cellulose

The demand for alpha cellulose shows evidence of continuing on the increase. This material is used extensively in the plastic industry as a base for many of the cellulose plastics, including the production of rayon. With the present heavy demand for cotton cellulose for explosives, attention is focussed on hardwood timber as a logical source of alpha cellulose. South Carolina hardwood timber resources are well suited for this purpose.

The present market price of alpha cellulose is from ninety to one-hundred dollars per ton. Pulpwood costs are about 30 to 40 per cent of the value of the finished product. With a relatively low and stable price for the pulpwood and with the other favorable factors and advantages in the labor market of this state, production of alpha cellulose should prove highly profitable.



In addition to the cellulose plastics, soybeans, which can be grown extensively throughout South Carolina, are also adapted to the manufacture of plastics. At top right is shown soybean plastic in the course of processing while below is seen soybean molding powder surrounded by preforms and finished molded automobile parts.

By-Products

Ethyl alcohol may be processed from the sugar liquors resulting from wood pulp processing for cellulose. Except in the case of a scarcity of fermentable materials, the production of alcohol from wood is not economical where the alcohol production must stand the entire cost. As a by-product of cellulose production, however, alcohol may be economically processed. The many commercial uses of ethyl alcohol are well known.

Other by-products of cellulose production may also be obtained. The economic considerations of the various by-products varies with the economic complexity of the chemical industry and are outside the scope of this discussion.

Wood Plastics

South Carolina is economically situated from the point of view of abundant raw material, water supply, transportation and other required resources for the production of wood plastics. Wood plastics are here referred to as a distinctly different type of plastic than those of the cellulose nitrate and cellulose acetate group, even though all of these are of cellulose base. Wood plastics are also classified as lignin plastics or of the lignin-cellulose group of plastics.

Woody materials are composed chiefly of hemi-cellulose, cellulose and lignin with varying amounts of other substances, in relatively small percentages. Other substances include water solubles, turpentine, rosin, tannin and similar materials which may be ignored for the purpose of this discussion. Hemi-cellulose materials are present in wood to the extent of about twenty per cent and consist of wood sugar anhydrides. Cellulose comprises about one half of the woody substance and is the fibrous portion of the wood. Lignin comprises about thirty per cent of the woody material and is the binding agent for the cellulose or fibrous portion of the wood.

If the hemi-cellulose and lignin are removed, together with the

(*Continued on page 52*)

The Part of Trucking in the War Effort

By

H. D. HORTON
Vice President,
American Trucking Associations



Frequent wheel alignment on the 3,500 vehicles of one concern saves tires, assures safety, and keeps more trucks available for essential transportation. Below is shown a truck load of three-bladed propellers en route from the factory to the airplane manufacturing plant. Because these propellers stand six feet above the truck top and 2½ feet above the average underpass, new routes had to be mapped out.

"PRODUCTION and transportation of war materials"—thus many times is transportation referred to as distinct from production. The two are closely allied. This is evident from the fact that a manufactured product is of no value until it is transported to the place where it can be used. A gun on the shipping floor is as worthless as no gun at all to a soldier in New Guinea. To help get the gun to the soldier as fast as possible is one of highway transportation's essential war jobs.

Equally important is the trucking industry's contribution to the war effort as an adjunct to production. Although transportation is not generally regarded as a manufacturing process, it might well be looked upon in much the same light as, for instance, degreasing. In either case, the process does not change the product itself, but gets it ready for the next operation.

The current importance of highway transportation as an adjunct to war production stems from the expansion of sub-contracting. That a large percentage of prime contracts has been awarded to comparatively few manufacturers is a widely publicized fact. The extent to which sub-contracting sifts down to the smaller firms is less well known.

The importance of sub-contracting for maximum production can be realized from the fact that 92 per cent of all manufacturing plants employ less than 100 wage earners and that these produce a substantial percentage of all manufactures. Many of these small plants are today making parts for the largest manufacturers of war equipment.

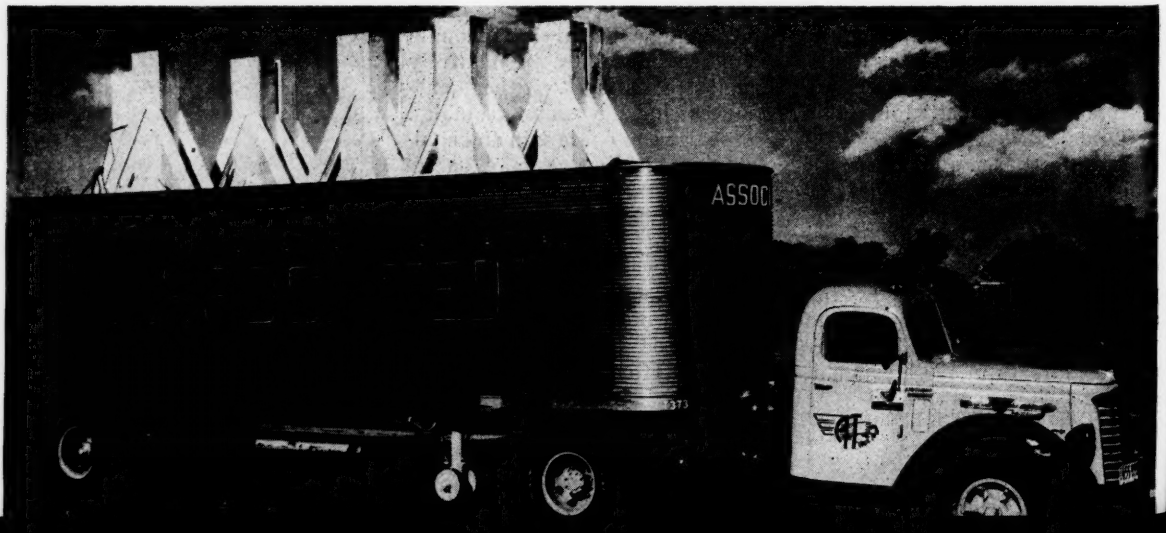
Engaged in peacetime production, each plant operated more or less independently. Orders would be placed for whatever was needed. The materials would be put in a shed. Excess production was stored with similar ease. Today, however, scarcity of materials makes inventory a virtual impossibility. Storage facilities are almost non-existent.

Unable to build up inventories sub-contractors and final assemblers must rely on a steady flow of materials, parts and sub-assemblies to keep assembly lines moving.

And it is just such a steady flow that highway provides.

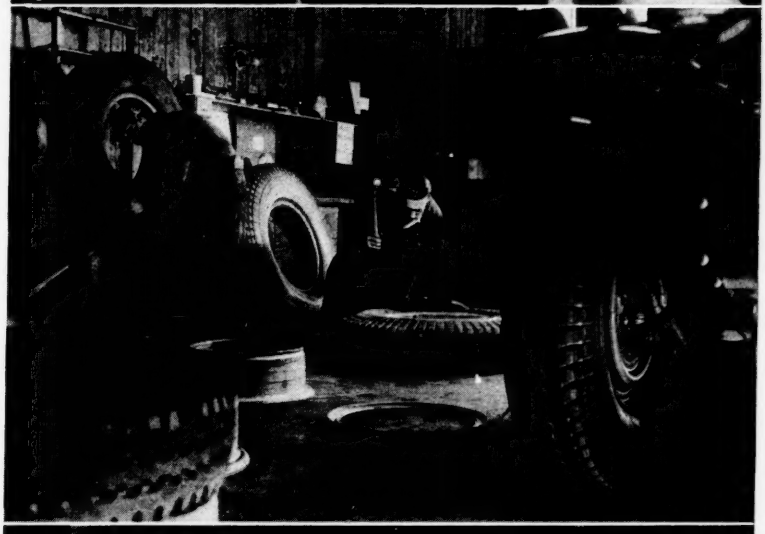
Measured in elapsed time from pick-up to delivery, trucks offer the fastest transportation between most places in the country. They serve 54,000 communities served by no other form of transportation.

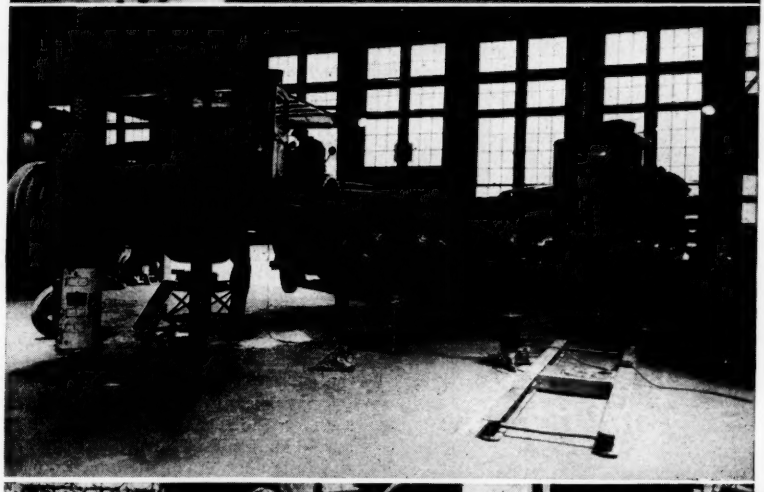
Highway transportation is flexible. A shipper may need ten trucks today, two tomorrow. This adaptability is being strained by the



Operation of a large fleet of trucks necessitates considerable maintenance. In the several metal working shops of Associated Transport welding is often necessary for the repair of chassis, bodies and engines, while the goal of the tire crew (top center) is more miles per tire. The lower center picture shows two tractors and a service car being overhauled. In the bottom picture, old parts, which are salvaged and returned to service when possible, are turned in when a new part is issued.









pressing demand for truck transport and the curtailment of truck production. Despite this situation, a shipper can call a trucking company and within an hour or two find a truck backed up to his loading platform, whether his factory is in the middle of a big city or the outskirts of a small town.

Equally as important as speed and flexibility is the conveyor-like flow of materials and parts which highway transportation make possible. Trucks deliver materials as needed. Daily and even semi-daily deliveries can be effected to minimize storage problems and yet assure a steady flow to keep assembly lines moving.

Total war must be fought by all the people. Highway transportation helps make it possible for every machine and every worker to contribute to the job.

Operators of highway common carriers are facing the same difficulties as manufacturers—scarcity of manpower, curtailment of equipment, lack of maintenance parts and additional problem of pulling trucks and trailers off the road for essential servicing while customers have urgent freight to move.

The trucking industry, however, is determined to "keep 'em rolling." Preventive maintenance, tire conservation and parts salvaging are the chief means. In Associated Transport, Inc., of which the writer is the chairman of the board, a completely planned and well executed rubber saving program is in operation. Tire life before recapping has been substantially lengthened. Tires are recapped more often. In an organization operating 3,500 vehicles, the rubber saving is considerable. Others have done equally commendable jobs. Freightways, for example, reports a 13 per cent increase in tire mileage.

To salvage parts, workers of

(*Continued on page* 52)

SOUTH'S CONSTRUCTION CONTRACTS TOTAL $103,502,000 IN FEBRUARY

By

S. A. LAUVER,

News Editor

SOUTHERN construction contracts totaled $103,502,000 in February.

The figure is lower than the valuation placed on awards for the preceding month, but it is above the $97,293,000 annual average for the last decade. Three Februaries during that period have seen Southern contracts exceed the one hundred million dollar mark. These occurred in the war years of 1941 and 1942 and in 1936, when the country was making its first strong stride out of depression depths.

Private building, that for many months has been restricted by Governmental orders, increased in February to a point which had not been equalled in seven previous months. Industrial awards, which fell drastically in January, strengthened considerably. Public building, public engineering projects and highway work dropped.

February's decline is not interpreted as discouraging in many construction circles, because the comparisons in most cases are with figures abnormally expanded by war prices and the waste and extravagance accompanying such activities. Some authorities recognize this fact and expect the year's construction totals to be far below those of the last two annual periods. They believe, however, that when the current year is finished, there will be a favorable total, as compared with a normal year, although the type of work will not resemble the complexion of construction during twelve months of peace time.

The total for the two elapsed months of 1943 represents a valuation of $236,481,000. How this compares with the similar periods of 1941, when the country was preparing for war, and of 1942, when the Nation was engaged in the conflict, is indicated by the totals for the initial two months of each of those years. For 1941 the figure was $337,597,000; for 1942, $535,956,000. No January-February totals previous to the war years even approached the 236 million dollar mark of the current comparable period.

Total is more than $6,000,000 above ten-year average

South's Construction By Types

February, 1943

	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Two Months 1943	Contracts Awarded First Two Months 1942
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	$117,000	$345,000	$205,000	$1,566,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	35,000	40,000	111,000	1,707,000
Residential (Apartments, Hotels, Dwellings)	7,736,000	1,570,000	12,678,000	28,467,000
Office	.....	28,000	10,000	392,000
	$7,888,000	$1,983,000	$13,004,000	$32,132,000
INDUSTRIAL	$13,881,000	$52,064,000	$23,505,000	$109,466,000
PUBLIC BUILDING				
City, County, State, Federal	$31,681,000	$43,769,000	$91,755,000	$258,765,000
Housing	25,532,000	32,615,000	55,032,000	35,081,000
Schools	1,036,000	12,355,000	2,103,000	6,409,000
	$58,249,000	$88,739,000	$148,890,000	$300,255,000
ENGINEERING				
Dams, Drainage, Earthwork, Airports	$12,312,000	$7,591,000	$27,271,000	$69,599,000
Federal, County, Municipal, Electric	685,000	835,000	875,000	1,796,000
Sewers and Waterworks	2,705,000	5,577,000	6,189,000	7,494,000
	$15,702,000	$14,003,000	$34,335,000	$78,889,000
ROADS, STREETS AND BRIDGES	$7,782,000	$56,309,000	$16,747,000	$15,214,000
TOTAL	$103,502,000	$213,098,000	$236,481,000	$535,956,000

Texas leads the list of Southern States for both the two months and for February. The total of awards for projects within the borders of the Lone Star State was $58,687,000 for January and February, $36,129,000 for the latter month. Projects in Georgia and Florida were second and third most active during February. Florida, Tennessee, Virginia, Georgia and Maryland are in the order named, the States where construction has been most active so far this year in the South.

A large amount of construction viewed as unessential by the War Production Board has been stopped in the last several months, despite the fact that the military construction programs have apparently passed their peaks and thus demands for some materials have slackened to some extent. Value of this work thus stopped, it was announced late in the month, is $1,301,230,566. Southern totals, as will those of other sections, will be affected.

Suspension of W. P. A. projects, which ordinarily are not included in construction contract awards, involved $413,000,000. Power and irrigation work, some of which was previously announced as in the South, was stopped on projects estimated to cost $478,272,697. Military and naval construction put on the inactive list would have cost $212,085,974. An additional $129,400,000 worth of construction was tied up in halted reclamation projects.

The $1,256,607,000 bill passed by Congress for construction of naval shore establishments will compensate in some measure for the slackened pace caused by the W.P.B. banned non-essential work. One of the projects will be a $10,000,000 layout near Annapolis to teach midship-

men to fly. Hospital facilities, as authorized in the bill, will cost $66,005,000; fleet facilities, $67,900,000; ordnance storage, $50,000,000; naval training and housing, $33,120,000; marine corps training structures, $28,632,000; camouflage work, $15,000.

Cessation of what approximates ten per cent of last year's war construction, however, accelerated thoughts of planners on what is to be done after the war. "The main task is to catch up on construction and repairs deferred on account of the war," is the opinion of Robert Moses, commissioner of parks for New York City, who sees no need for apologizing for proceeding now with plans for reconstruction of obsolete or dilapidated areas, for adequate systems of transportation, for decent living and recreation facilities and for other public services.

Speaking before a conference of North Atlantic highway officials, Mr. Moses said that as a result of recent casual meetings of post-war planners in and out of the Government, he doesn't know "whether to be impressed with the obvious sincerity and high purpose of these architects of a better future, or to be appalled by their juggling of astronomical figures, their lack of interest in the tax and credit funds from which these sums are to be extracted, and their reluctance to entertain any conservative, orderly program of limited objectives."

Discussing various proposals for measuring the scope of needed post-war public work, Commissioner Moses thinks the best approach is from the angle of employment in the last depression. "We may assume that at least the maximum number of unemployed in, let us say, the year 1934, must be taken care of in the year after the war by public work, while normal employment is being restored, and that this number will begin to taper off in the course of another year."

He prefers sizable contract jobs, but contracts, he says, "have their limitations, being primarily adapted to fairly large projects.

"They aim at the employment of machines rather than men. Labor saving devices are their visible symbol. On the other hand, their benefits are spread over the whole country, and it is manifestly unfair to measure their effect on employment merely by those working at the location of the job."

Commissioner Moses further said: "A mixed system of contract and work relief under which the contractor is required to employ a majority of his men from work relief or veterans' roll has some manifest advantages, and is suited to highway and related construction. One hundred dollars per month per man was the average for each C. W. A. worker, and anywhere from three to four hundred dollars for each man on genuine major contract work. The cost of a straight contract system to employ all those out of work after the war, at prevailing rates of wages, would break any government. Major contract jobs must therefore be supplemented by small construction and repair projects involving force account and work relief."

Where the funds will come from, Commissioner Moses admitted, he does not know. "No doubt," he pointed out, "Federal, state and municipal governments must all contribute. Some of the projects may be self-liquidating or partially self-liquidating, some will involve borrowing, and some can be paid out of current taxes." He sees a "tough prospect" in presenting the bills to the taxpayer at a time when the country is beginning to liquidate a tremendous war debt. His conclusion is that a relief program hastily devised would be poorly executed and tremendously expensive. Between public works and straight relief, he chooses public works.

South's Construction By States

February, 1943

	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Two Months 1943	Contracts Awarded First Two Months 1942
Alabama	**$7,381,000**	**$3,535,000**	**$11,821,000**	**$13,517,000**
Arkansas	**2,786,000**	**4,473,000**	**15,987,000**	**4,331,000**
Dist. of Col.	**579,000**	**8,000,000**	**1,613,000**	**10,904,000**
Florida	**10,426,000**	**27,173,0000**	**26,806,000**	**31,394,000**
Georgia	**10,589,000**	**16,530,000**	**18,551,000**	**28,545,000**
Kentucky	**1,134,000**	**2,229,000**	**3,268,000**	**35,316,000**
Louisiana	**2,788,000**	**2,856,000**	**6,824,000**	**44,244,000**
Maryland	**4,878,000**	**70,458,000**	**15,833,000**	**28,726,000**
Mississippi	**6,350,000**	**5,602,000**	**8,031,000**	**7,394,000**
Missouri	**1,327,000**	**3,968,000**	**2,576,000**	**7,209,000**
N. Carolina	**3,638,000**	**1,262,000**	**10,616,000**	**39,787,000**
Oklahoma	**6,064,000**	**1,224,000**	**8,628,000**	**51,896,000**
S. Carolina	**1,315,000**	**1,287,000**	**6,060,000**	**18,407,000**
Tennessee	**4,657,000**	**4,395,000**	**20,613,000**	**64,593,000**
Texas	**36,129,000**	**56,889,000**	**58,687,000**	**60,164,000**
Virginia	**2,418,000**	**3,092,000**	**20,319,000**	**64,185,000**
W. Virginia	**43,000**	**7,325,000**	**248,000**	**25,344,000**
TOTAL	**$103,502,000**	**$213,098,000**	**$236,481,000**	**$535,956,000**

Industrial

(Including Private Utilities)

	February, 1943 Contracts Awarded	February, 1943 Contracts to be Awarded	Contracts Awarded First Two Months 1943
Alabama	$1,900,000	$90,000	$3,400,000
Arkansas	1,140,000	40,000	3,230,000
Dist. of Col.	.....	.....	.....
Florida	2,839,000	5,035,000	3,164,000
Georgia	130,000	205,000	130,000
Kentucky	118,000	325,000	1,712,000
Louisiana	75,000	910,000	115,000
Maryland	235,000	355,000	648,000
Mississippi	16,000	70,000	101,000
Missouri	236,000	35,000	1,120,000
N. Carolina	1,970,000	235,000	1,995,000
Oklahoma	230,000	50,000	370,000
S. Carolina	270,000	95,000	344,000
Tennessee	42,000	294,000	865,000
Texas	4,590,000	44,155,000	6,121,000
Virginia	55,000	85,000	55,000
W. Virginia	35,000	85,000	135,000
TOTAL	$13,881,000	$52,064,000	$23,505,000

Public Building

(City, County, Federal; Housing; Schools)

	February, 1943 Contracts Awarded	February, 1943 Contracts to be Awarded	Contracts Awarded First Two Months 1943
Alabama	$3,115,000	$3,225,000	$4,024,000
Arkansas	1,346,000	4,136,000	8,731,000
Dist. of Col.	71,000	735,000	819,000
Florida	5,119,000	19,153,000	14,571,000
Georgia	9,674,000	16,240,000	15,274,000
Kentucky	481,000	550,000	481,000
Louisiana	335,000	950,000	3,185,000
Maryland	2,581,000	12,968,000	11,168,000
Mississippi	5,531,000	5,048,000	6,048,000
Missouri	901,000	3,666,000	1,161,000
N. Carolina	1,068,000	916,000	6,450,000
Oklahoma	1,024,000	406,000	1,434,000
S. Carolina	810,000	1,137,000	5,221,000
Tennessee	2,215,000	2,968,000	17,048,000
Texas	22,288,000	6,799,000	34,495,000
Virginia	1,690,000	2,652,000	18,775,000
W. Virginia	.....	7,190,000	5,000
TOTAL	$58,249,000	$88,739,000	$148,890,000

Private Building

(Assembly, Commercial, Residential, Office)

	February, 1943 Contracts Awarded	February, 1943 Contracts to be Awarded	Contracts Awarded First Two Months 1943
Alabama	$.....	$20,000	$.....
Arkansas	152,000	.....	1,860,000
Dist. of Col.	56,000	.....	301,000
Florida	.....	50,000	285,000
Georgia	.....	.....	.....
Kentucky	.....	190,000	.....
Louisiana	.....	.....	.....
Maryland	1,050,000	410,000	1,298,000
Mississippi	100,000	.....	320,000
Missouri	20,000	60,000	125,000
N. Carolina	15,000	20,000	15,000
Oklahoma	2,460,000	18,000	2,485,000
S. Carolina	90,000	55,000	90,000
Tennessee	50,000	45,000	165,000
Texas	3,591,000	1,005,000	5,431,000
Virginia	304,000	60,000	529,000
W. Virginia	.....	50,000	100,000
TOTAL	$7,888,000	$1,983,000	$13,004,000

Public Engineering

(Dams, Drainage, Sewers, Waterworks, etc.)

	February, 1943 Contracts Awarded	February, 1943 Contracts to be Awarded	Contracts Awarded First Two Months 1943
Alabama	$1,875,000	$100,000	$2,648,000
Arkansas	1,058,000	97,000	2,076,000
Dist. of Col.	.....	65,000	41,000
Florida	1,108,000	2,535,000	6,511,000
Georgia	290,000	85,000	1,820,000
Kentucky	535,000	.....	1,075,000
Louisiana	1,489,000	721,000	2,374,000
Maryland	436,000	3,400,000	743,000
Mississippi	703,000	424,000	1,562,000
Missouri	50,000	47,000	50,000
N. Carolina	585,000	91,000	1,462,000
Oklahoma	2,350,000	700,000	2,900,000
S. Carolina	.....	.....	65,000
Tennessee	1,775,000	888,000	1,910,000
Texas	3,323,000	4,655,000	8,626,000
Virginia	125,000	195,000	472,000
W. Virginia	.....	.....	.....
TOTAL	$15,702,000	$14,003,000	$34,335,000

Roads, Streets, Bridges

	February, 1943 Contracts Awarded	February, 1943 Contracts to be Awarded	Contracts Awarded First Two Months 1943
Alabama	$491,000	$100,000	$1,749,000
Arkansas	90,000	200,000	90,000
Dist. of Col.	452,000	.....	452,000
Florida	1,360,000	400,000	2,275,000
Georgia	495,000	.....	1,327,000
Kentucky	.....	1,164,000	.....
Louisiana	889,000	275,000	1,150,000
Maryland	576,000	53,325,000	1,976,000
Mississippi	.....	60,000	.....
Missouri	120,000	160,000	120,000
N. Carolina	.....	.....	694,000
Oklahoma	.....	50,000	1,439,000
S. Carolina	145,000	.....	340,000
Tennessee	575,000	200,000	625,000
Texas	2,337,000	275,000	4,014,000
Virginia	244,000	100,000	488,000
W. Virginia	8,000	.....	8,000
TOTAL	$7,782,000	$56,309,000	$16,747,000

Important New Industrial Plants and Expansions in the South During February

ALABAMA

BIRMINGHAM—detinning plant—H. K. Ferguson Co., Cleveland, Ohio, general contractor for detinning plant will soon begin work on project; Mr. Schaffer of the company is now located at Tutwiler Hotel; will open offices at 1012 Empire Bldg.; cost $750,000; plant will be operated by Johnston-Jennings of Cleveland, Ohio.

ARKANSAS

LITTLE ROCK—lumber mill—Jordan & Lowe Lumber Co., Bonita, La., erect lumber mill at North Little Rock; install machinery to be shipped from Bonita.

YELLVILLE — mining — Silver Hollow Mining Co., P. O. Box 308, let following materials contracts for development of zinc mine: McNeal Machinery Co., Joplin, Mo.; Clarksville Machine Works, Clarksville, Ark.; General Steel Products Co., Joplin, Mo.; Berry Mercantile Co., Yellville; W. B. Gilley Lumber Co., Yellville; purchased complete generating plant from Carrol Electric Cooperative Corp., Berryville; W. J. Cushing, Engr.; construction work by company's forces.

Additional facilities — Defense Plant Corp., executed contract with Root Petroleum Co., Shreveport, La., for additional facilities in Arkansas, at cost of $980,000; overall commitment of $4,480,000.

FLORIDA

JACKSONVILLE — shipyard — Marine Construction Co., 700 Consolidated Bldg., construct shipyard for wooden barges; 1-story; 300x60 ft.; frame; contract for piling let to Burke Construction Co., Jacksonville; work started.

MIAMI—boat building—Bristol Construction Co., 337 N. E. 35th St., has contract, work started on $11,600 boat building, 501 N. W. South River Drive, for Prigg Boat Yard, Paul Prigg, Pres., 3627 N. E. First Court; Robert E. Collins, Archt., 422 N. E. 22nd Terrace; Miami Roofing Co., 550 N. W. Seventh St., has contract for roofing.

Plant—Defense Plant Corp. authorized an increase in its contract with Intercontinent Aircraft Corp., Miami, to provide plant facilities in Florida; overall commitment of $2,047,000.

GEORGIA

COBB COUNTY — gate houses — Van Winkle & Co., 1008 Norris Bldg., Atlanta, has contract for 8 gate or guard houses for U. S. Area Engineer Office, Marietta, for Marietta Aircraft Assembly Plant; Robert & Co., Engrs., Marietta and Bona Allen Bldg., Atlanta.

MACON—dehydration plant—Continental Packing Co., Wallace W. Scoville, P. O. Box 165, has been authorized by the Agricultural Department to install necessary equipment for dehydration of vegetabes; will install one 10 ton Cleaver-Brooks Co., Milwaukee, Wisc., tunnel type dehydrator; equipment purchased.

Equipment—Defense Plant Corp. has executed contract with Lombard Iron Works, Augusta, for equipping plant at cost of $90,000.

KENTUCKY

Plant—Defense Plant Corp. authorized an increase in its contract with National Distillers Product Corp., New York City, to provide additional facilities at plant in Kentucky, overall commitment of $118,000.

LOUISIANA

BATON ROUGE—plant—H. K. Ferguson Co., Cleveland, Ohio, in charge of construction operations of plant, which when completed, will be occupied by Copolymer Corp. recently organized with A. L. Friedlander of Dayton Rubber Co., Dayton, Ohio, president.

NEW ORLEANS—buildings—Gervais F. Favrot, Balter Bldg., has contract for extenstion to electric shop and 7 tool warehouse shacks; Pittman Brothers Construction Co., 2800 N. Galvez St., has contract for protection bulkhead along Industrial Canal; Gervais F. Favrot, Balter Bldg., has contract for extenstion to 3 toilets, installing light fixtures, etc.; Boh Brothers Construction Co., 2400 Cypress St., has contract for shop building; all for Delta Shipbuilding; O. O. Carpenter, plant facilities engineer.

Contracts Awarded

MARYLAND

BALTIMORE — warehouse — Consolidated Engineering Co., 20 E. Franklin St., has contract for concrete block warehouse, 1208 Wicomico St. for Standard Gas & Equipment Corp.; 1-story; 139x124 ft.; cost $30,000.

BALTIMORE — alteration, etc. — Lacchi Construction Co., 337 St. Paul Place, has contract for alterations to offices; Consolidated Enginering Co., 20 E. Franklin St., has contract for plant protection tower, 2122 Broening Highway, for Eastern Aircraft, Division of General Motors Corp.

BALTIMORE — alterations — Consolidated Engineering Co., Inc., 20 E. Franklin St., has contract for alterations and additions, 1101 Key Highway for Bethlehem Steel Co.; 1 and 2-story; brick and frame.

BALTIMORE—plating room extension—Morrow Brothers, Inc., 14 E. Eager St., has contract for plating room extension, Bush & Hamburg Sts. for The Koppers Co., American Hammered Piston Ring Division.

BALTIMORE—storage building—Baltimore Contractors, 15 N. Central Ave., has contract for storage building, 708 S. Eden St. for W. H. Killian Co.; 1-story; conc. and cinder block; cost $15,000.

MISSISSIPPI

JACKSON—building—Delta Oil and Fertilizer Co. has permit to erect seed storage house; cost $16,000, located east side of Valley St. between Moorehouse and Florence Sts.

MISSOURI

ST. LOUIS—warehouse—Robert Paulus Construction Co., 2205 Ann St., has contract for 1-story warehouse, 1228 Hadley St. for Southwest Bolt & Nut Co.; 25x90 ft.; conc. found.; comp. roof; Murphy & Wischmeyer, Archts., Washington University.

ST. LOUIS—alterations—Dickie Construction Co., 317 N. 11th St., has contract for alterations to interior of 7-story building at 720 N. 12th St., for Central Terminal Co.; Spearl Becker & Falvey, Archt., Arcade Bldg.; cost $600,000.

ST. LOUIS—warehouse—W. C. Harting Construction Co., 722 Chestnut St., has contract for car loading warehouse, 1311 S. 2nd St. for Manufacturers Railway Co., 2729 S. Broadway; 1-story; brick; 30x55 and 29x20 ft.; concrete foundation; tar and gravel roof.

UNIVERSITY CITY—alterations—Alco Valve Co., 2628 Big Bend Blvd., Maplewood, let contract to E. A. Brunson Construction Co., 4052 Forest Park Blvd., for alterations to factory, 865 Kingsland Ave.; Mid-City Plumbing & Engineering Co., 3925 Washington Ave., has contract for plumbing.

UNIVERSITY CITY—alterations—General Installation Co., 2234 Olive St., has contract for heating work and Gamp Electric Co., 2924 Locust St., for electric work for factory building alterations, Kingsland Ave. for Alco Valve Co., 2628 Big Bend Blvd., Maplewood; E. A. Brunson Construction Co., 4052 Forest Park Blvd., Gen. Contr.; Gray & Pauley, Archts., 3800 West Pine Blvd.

Equipment—Defense Plant Corporation entered into contract with Ozark Mountain Distilling Co., Joplin, Mo., to provide equipment for plant in Missouri.

NORTH CAROLINA

Additional plant facilities—National Carbon Co., Inc., 30 E. 42nd St., New York City, has had its contract with Defense Plant Corp. increased approximately $1,450,000 to provide additional plant facilities in North Carolina; overall commitment of approximately $7,550,000.

OKLAHOMA

Pipeline—Republic Natural Gas Co., Oklahoma City, has started survey and is acquiring right of way for constucting 16 in. pipeline from its holdings in the Guymon section of Texas County to connect with the trunk system of Northern Natural Gas Co., 3 miles east of Hugoton, Kans.

SOUTH CAROLINA

GREENVILLE — addition — Convenience, Inc., River and Hammond Sts., let contract to Henry B. McKoy Co., Finlay Bldg., for 2-story addition at rear of present stone building; manufactures surgical dressings; cost $30,000.

TENNESSEE

CLEVELAND—mining—Cleveland Manganese Co., formed by C. W. Johnson, mining engineer of Uniontown, Pa., to develop manganese deposits, 8 miles out the Dalton Highway; will grade road to the location from Dalton Highway; leased building for company's offices; negotiations under way with Volunteer Electric Co-Operative Association to extend a power line to the location for operation of machinery; machinery will include gas shovels, crusher, screen and small mine locomotive.

NASHVILLE—facilities—Jacobs Packing Co., 1416 Adams St., plans facilities for employees, to include erection of addition, installation of 5 closets, floor drains, shower baths, etc.; owner builds; William A. Roach, 903 Church St., has contract for plumbing.

TEXAS

DENISON—warehouse—Denison Poultry & Egg Co. erecting warehouse between Sears and Morton Sts.; frame; concrete foundation; sheet metal roof; 70x100 ft.

FORT WORTH—plant equipment—Defense Plant Corp., announced contract with Frank Kent Manufacturing Co., Fort Worth, to provide equipment for plant in Texas.

HOUSTON—lockers, etc.—Texas Electric Steel Casting Co., Bringhurst and Gillespie Sts., let contract to Ness Construction Co., 200 Portwood St. for lockers and showers.

HOUSTON—laboratory—Following have sub-contracts for laboratory, for Defense Plant Corp. owners; Crown Central Petroleum Corp., Pasadena, Lessee; Andrew Ness Construction Co., 200 Portwood St., Houston, Gen. Contr.; Alan Cook Electric Co., 2114 Polk St. has contract for electric wiring; Lee Rogerson Plumbing & Heating Co., 908 Truxillo, plumbing; Mosher Steel Co., 3900 Washington Ave., steel; Henderson Brothers, 7051 Chocolate Bayou Rd., excavation; Shelton W. Greer, M. & M Bldg., steel sash; Bialock & McCall Lumber Co., 3219 Leeland Ave., lumber; Osborne-Dobbs Co., 4400 Yale St., millwork; Parker Brothers, 5301 Navigation Blvd., concrete and building materials; J. A. Sharman & Son, 1316 Spring St., roofing and sheet metal, all Houston.



HOUSTON—oxygen plant—F. H. McGraw & Co., 51 E. 42nd St., New York, has contract for new unit of Air Reduction Sales Co., to manufacture oxygen; cost $500,000; will practically double output; frame 87x54 ft.; concrete floors and gypsum plank roof; in operation by May; Herbert A. Neyer, is construction superintendent for the contractors.

Additional unit—Consolidated Chemical Industries, Inc., Petroleum Bldg., Houston, starting work on new unit for Manchester plant at cost of $1,000,000; William A. Brunet, Shell Bldg., Houston, has contract for foundation for plant; one building, of brick and steel; 1-story; 30x60 ft.; will cover an area of about 100x175 ft.; Chemical Construction Co. of New York City, is engineer.

Laboratory—Andrew Ness Construction Co., 200 Portwood St., Houston, has contract for 1-story laboratory building; 30x80 ft.; brick and reinforced concrete; concrete slab foundation and floors; corrugated asbestos roof; Defense Plant Corp., owners; Crown Central Petroleum Corp., Pasadena, Tex., Lessee.

Refinery—Frick-Reid Supply Corp., Texas City, has contract for refinery in Texas; call for bids soon for laboratory building, 66x66 ft.; office, 70x69 and 59x26 ft.; triangular shape and misc. buildings; all structural clay tile and reinforced concrete; plans, etc. from Defense Plant Corp., Tulsa, Okla.; Republic Oil Refining Co., Texas City, lessee.

Rubber plant—General Tire & Rubber Co., Cleveland, Ohio, entered into contract with government to operate a synthetic rubber plant in Texas; associated with the company will be General Latex & Chemical Corp., Cambridge, Mass.; Harvey J. Elwell, president of General Latex will serve as general manager; plant already under construction.

VIRGINIA

RICHMOND — storage tanks — Standard Oil Co. of New Jersey, has permit for 2 steel storage tanks on south bank of James River; cost $55,000.

Contracts Proposed

ALABAMA

MOBILE—ice plant—Ralph R. Sprinkell, Mgr. of Alabama United Ice Co., 167 S. Royal St., Mobile, interested in organization of Polar Ice Co., Inc. and erection of ice plant on S. Royal St.; daily capacity 100 tons.

ARKANSAS

LITTLE ROCK — lumber plant — Alan Schafer of Dillon, S. C. acquired Dunlap Lumber Mills at Little Rock; applied to War Production Board for permission to convert one of the mills into a box factory.

BISON — timber — Kellog Lumber Co., Monroe, La., acquired tract of 1900 acres, southeast of Bison in Saline river bottoms, containing virgin hardwood and pine.

FLORIDA

BARTOW — packing plant — Charles B. Higgins of Fort Meade, acquired tract between Bartow-Fort Meade Highway and Seaboard Air Line tracks; remove packing house from Lakeland and erect at Bartow.

LYNN HAVEN—fuel oil plant—U. S. Engineer Office, Jacksonville, will supervise dredging of 500,000 cu. yds. of material at docks in connection with construction of the $5,000,000 fuel oil storage and shipping plant at Lynn Haven; will provide movement of 50,000 bbls. of bunker-C fuel oil daily to Jacksonville and the East Coast; survey of plant site will be completed soon; government will provide housing facilities for bachelor labor; barracks will be provided at Lynn Haven; building program will include 14 miles of railroad trackage, 5 miles to connect with Bay Line and 10 miles of yard tracks, 3 miles first class A type highway, special steam plants with movable coils to heat the oil for pumping from barges to storage tanks and tank cars; pumping stations; telephone lines and electrical lines.

GEORGIA

DECATUR — chicken hatchery — DeKalb County Chamber of Commerce and Agriculture, Mrs. W. Guy Hudson, executive secretary, construct a 180,000 egg chicken hatchery and a 500-unit freezer locker; estimated cost of hatchery, dressing facilities and freezing units, $100,000.

MACON—dehydration plant—Department of Agriculture approved conversion of Continental Packing Co.'s plant to a dehydration plant; plant is a branch of American Cone & Pretzel Co., Philadelphia, Pa.; addition of dehydration unit will be only major change required.

SAVANNAH—plant—Union Bag & Paper Corp., will erect plant to extract tall oil.

SAVANNAH — reorganization — Committee of five appointed to act in an advisory capacity with relation to reorganization proceedings and rehabilitation program for Central of Georgia Railway Co., with Harry C. Hagerty of New York City, chairman; improvements contemplated include laying of 15,000 tons of rails during each of the proposed five years, installation of automatic block traffic control system between Macon and Forsyth, extension of telephone system, purchase of 5 Diesel and 8 steam locomotives, purchase of 10 passenger coaches, 6 express cars, 2 baggage and mail cars, 165 pulpwood cars, 1550 box cars, 10 cement cars and 250 open hopper cars.

Hydro Electric Plant—Federal Power Commission will hold hearing April 8, at Room 216 of Commission's Regional Office, 10 Forsyth Street Building, Atlanta, on Georgia Power Co.'s declaration of intention to complete construction of its Furman Shoals hydro electric project on the Oconee River in Georgia; project will be operated as a storage hydro electric development.

LOUISIANA

MARRERO—timber wharf—Celotex Corp., applied to War Department for permit to construct and maintain extension to their existing timber wharf and installation of 4 clusters.

NEW ORLEANS—tool shacks, etc.—O. O. Carpenter, plant facilities engineer, Delta Shipbuilding Co., Inc., received bids Feb. 17 for extension to electric shop and 7 tool warehouse shacks; following are prospective estimators: Gervais F. Favrot, Balter Bldg.; Lionel F. Favret, 937 Gravier St.; Otis W. Sharp & Son, Inc., 1838 Robert St.; Chris Larsen Co., Maritime Bldg.; D. J. Schwartz, 5818 Catina St.

NEW ORLEANS—expansion—Pendleton Co., Edmund B. Glenny, sec., plans expansion of shipyard at cost of $300,000; Barnard-Godat & Heft, Engrs., Terminal Station Bldg., New Orleans.

NEW ORLEANS — overpass — Frederick R. Harris, Inc., Consit. Engrs., Electric Bldg., Houston, Tex., opened bids Feb. 26 for construction of an overpass connecting the proposed plate shop with the wharf at Todd-Johnson Dry Dock at Algiers; following submitted estimates: Lionel F. Favret, 937 Gravier St.; J. Gordon Lee, Carondelet Bldg.

Pipe Line—Texas Pipe Line Co., Houston, Tex., applied to War Department for permit to install and maintain 8-in. oil pipe line across channel section, under and across Intracoastal Waterway, Atchafalaya River-Vermillion River Section.

MARYLAND

BALTIMORE—heating—Eastern Aircraft Division of General Motors Corp., C. E. White, in charge, 2122 Broening Highway, receives bids March 3 for heating for office; following are prospective estimators: L. J. McGuire, 6 E. Franklin St.; Wallace Stebbins Co., 100 S. Charles St.; Lloyd E. Mitchell, Inc., 2315 Cecil Ave.; Sutch & Reinhold, 4709 Liberty Heights Ave.; Lacchi Construction Co., 337 St. Paul Place, low bidder for alteration to offices.

BALTIMORE—alteration and addition—Maryland Bolt & Nut Co., receives bids March 4 at office of Crout, Snyder & Crandell, 20 E. Lexington St., for alteration and addition to plant at Mount Washington; following are prospective estimators: Morrow Brothers, Inc., 14 E. Eager St.; Consolidated Engineering Co., 20 E. Franklin St.; Leimbach & Williams, Inc., 30 W. Biddle St.; W. E. Bickerton Construction Co., 101 W. 22nd St.; Cummins Construction Co., 803 Cathedral St.; Cogswell Construction Co., 513 Park Ave.; Charles R. Scrivner Co., Inc., 606 Charing Cross Rd.

CURTIS BAY—power house addition—Leimbach & Williams, Inc., 30 W. Biddle St., Baltimore, estimating, bids opened Feb. 9 on power house addition, Curtis Bay, for Bethlehem Fairfield Shipyard.

MISSOURI

ST. LOUIS—plant—Hammer Dry Plate & Film Co., D. Craig Daily, Pres., 3547 Ohio Ave., rebuild partially burned structure N. W. corner of Miami St. & Ohio Ave.

NORTH CAROLINA

CHARLOTTE — plant — Defense Plant Corp., has completed purchase of Darlington Fabrics Co.'s plant near here; will be converted into war materials manufacturing operation of National Carbon Co., Inc., 30 E. 42nd St., New York; will expend approximately $500,000 for remodeling and equipment; manufacture dry cell batteries.

SOUTH CAROLINA

FLORENCE — dehydration plant — Florence Dehydration Co., J. C. Weeks, Pres., has plant in East Darlington St.; install equipment; 10 ton capacity output every 24 hours.

GREENVILLE—plant—Gaylord Container Corp., 14 Gordon St., acquired plant at Gordon St. and Eighth Ave.

LAKE CITY—dehydration plant—Department of Agriculture approved application for dehydration plant to be operated by Lake City Dehydration Co.

LOBECO—expansion—Apte Brothers Canning Co., Tampa, Fla., plans expansion of plant for dehydration of vegetables.

SPARTANBURG—cold storage plant—U. S. Department of Agriculture approved a proposed food freezing and cold storage plant in Spartanburg county; W. H. Stallworth, member of committee; estimated cost $65,000.

TENNESSEE

ATHENS—chair plant—Henry Thompson acquired interest in Athens Chair Co., at Athens and a chair plant at Morrison, Tenn.; both plants manufacture chairs of hickory timber; plan expansion at Athens plant.

ATHENS—addition—Victory Manufacturing Co., R. F. Ball, Pres., soon call for bids for addition to factory; brick; comp. roof; wood and concrete floors.

CHATTANOOGA — pipeline — Tennessee Gas & Transmission Co., will have hearing reopened on March 10 at Washington, D. C., on proposal to construct natural gas pipeline from Louisiana to Ashland, Ky.; public hearing adjourned at Nashville, Tenn.

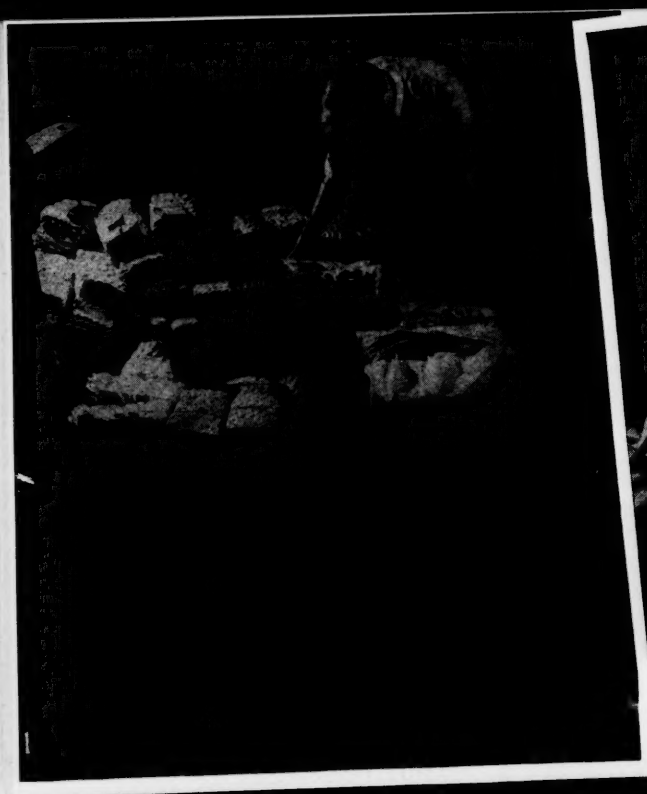
CLEVELAND — quick freeze — Chickamauga Producers Co-Operative, Inc., E. Shouse, Mgr., Edwards St., has plans in progress, soon call for bids for building for quick freeze plant.

DAYTON — plant — Chickamauga Producers' Co-Operative, Inc., E. E. Shouse, Mgr., plans construction of $17,000 quick-freeze unit at Dayton, to be in operation in May; company purchased building on Edwards St., Cleveland, and building on 34th St. as new location for quick freeze plant.

MEMPHIS—plant—Road Builders Equipment Co., Third and Calhoun Sts., acquired site in rear of present location for erection of permanent plant; 60 x 75 ft.; steel framework; concrete blocks.

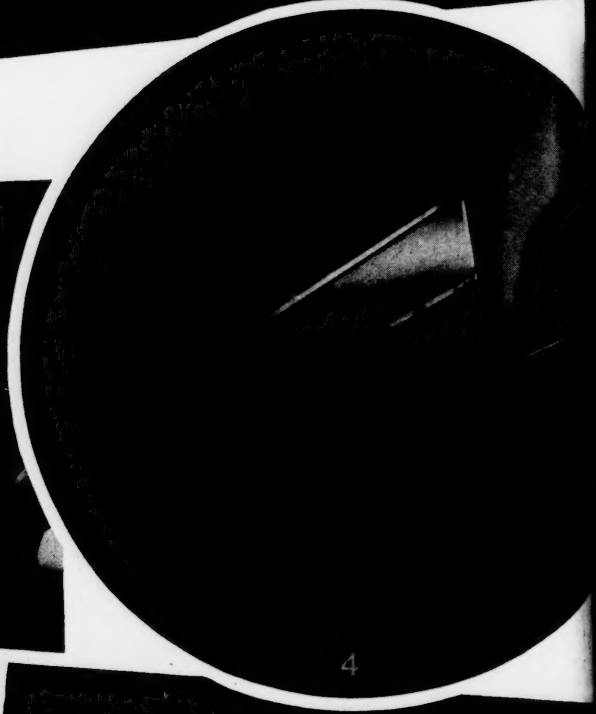
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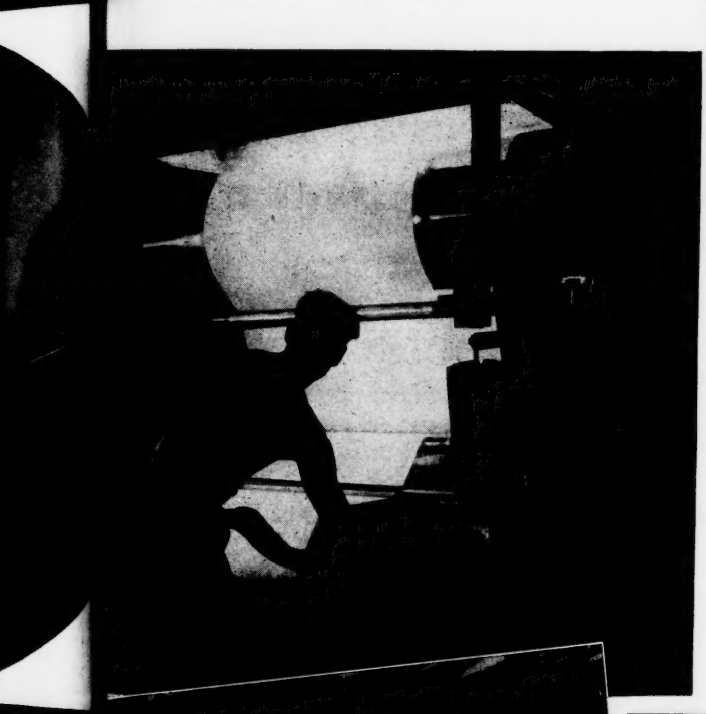


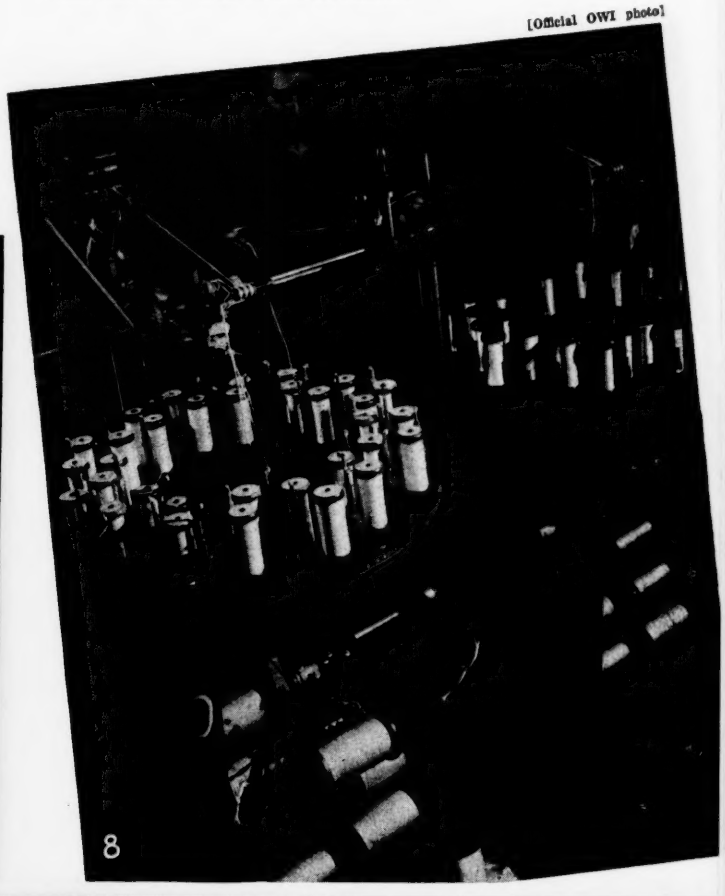


Parachute Cloth and Shrouds Production

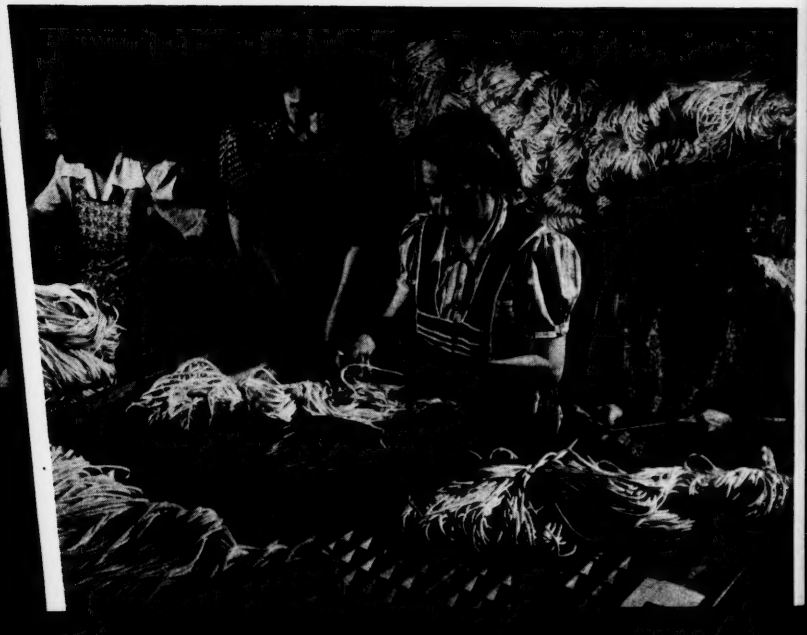
1. *Removing the covering and checking the weight of a bale is the first operation in preparing raw silk for parachute cloth and shroud liner.*
2. *In order to obtain the best results in subsequent operations it is necessary that the silk be treated in a soaking bath. Here the still or non-agitated method is being used.*
3. *After treatment the raw silk is wound from skeins onto spools.*
4. *With the scarcity of raw silk, nylon has been called into service and is shown here coming from the spools to the warping machine. The number of threads is 1,000. When one thread breaks, an electric switch stops the operation of all the machines.*
5. *The quilling operation, early in the making of parachute cloth, consists of winding the fine nylon thread from spools onto small quills.*
6. *When silk is used, the cloth is washed in this continuous machine following a de-gumming process.*
7. *Here, silk parachute cloth is straightened, tentered to width and finished.*
8. *These machines braid pure silk shroud lines for parachutes.*
9. *On this 5B spinning machine, which is the latest type doubling and twisting machine available, shroud lines for parachutes are produced.*
10. *Final stage in the production of parachute shroud lines before they are packed and shipped is that of inspection and each line must fulfill rigid specifications.*

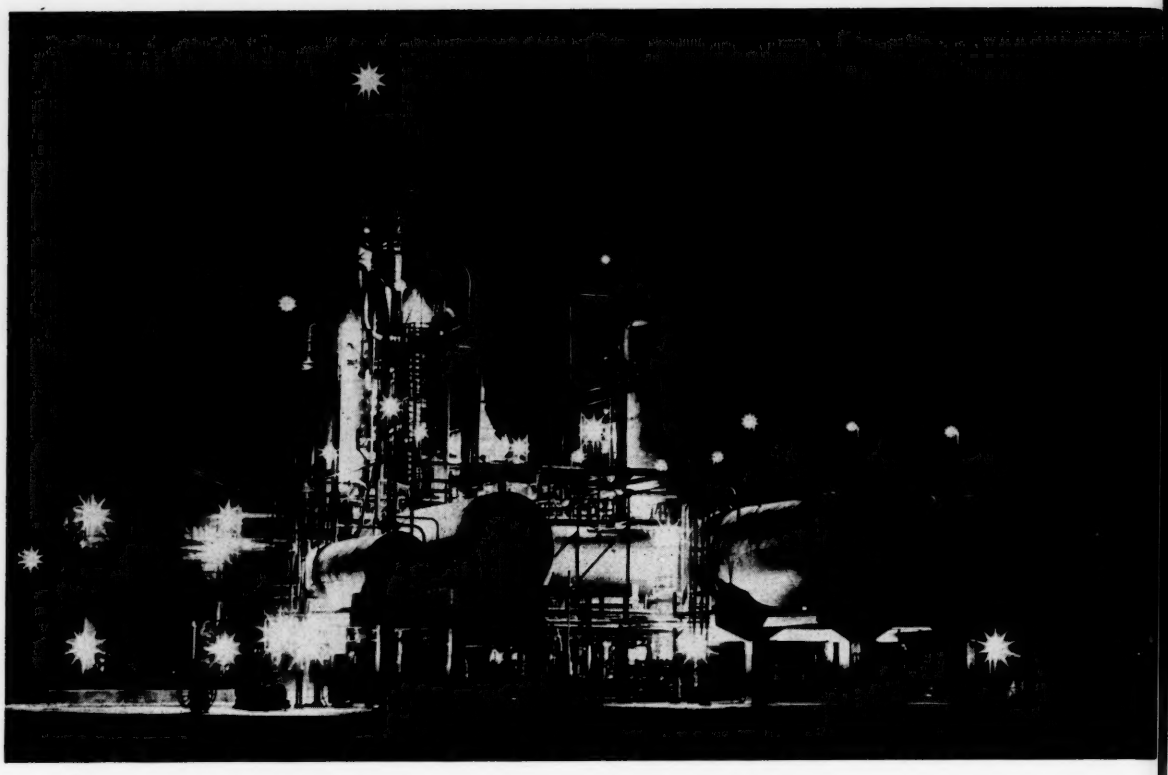
[Official OWI photo]











Port Arthur Activity Reflects Texas' Industrial Gains

By

J. C. WATKINS

WITH Texas ranking eighth among the states in the value of industrial contracts and allocations of the British Empire Purchasing Mission, as reported by the MANUFACTURERS RECORD, the expansion in plant capacity for the Lone Star State is typified by that taking place at Port Arthur.

This city's share in Texas' remarkable industrial upsurge on the basis of war spending calls for more than $200,000,000 worth of new manufacturing establishments or the enlarging of existing plants.

Greatest single development in the Port Arthur area is the construction of a synthetic rubber plant near Port Neches, where a once sterile meadow today sprouts steel towers, tanks, webs of pipe and the other paraphernalia for a large scale industrial operation. Participating organizations are the B. F. Goodrich Rubber Co. and the Neches Butane Products Co., the latter corporation formed by the major oil refineries in the area with the backing of the Defense Plant Corporation. When the project goes into production this summer it will have an output of 100,000 tons yearly.

The Lummus Company is general contractor for the Neches Butane Products Co., while Winston Brothers Construction Co., Haglin and Sons, Missouri Valley Bridge and Iron Co. and Sollitt Brothers Construction Co. are pooling their efforts on the construction of the Goodrich plant.

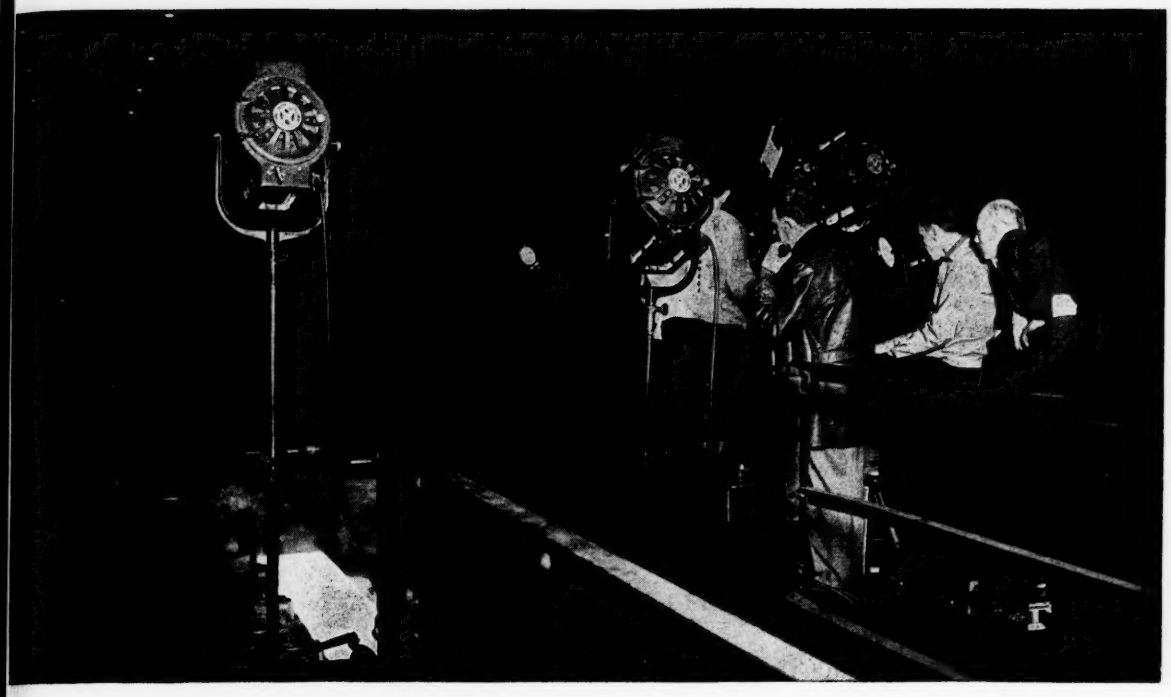
Chemists connected with the industry assert that so efficient will be the synthetic product that the demand for it will continue to be strong, no matter how plentiful the supply of natural rubber may become.

Above—This Port Arthur scene is representative of a large part of this city's, and Texas', essential industry and much of the regions growth is dependent upon petroleum.

The plants of the Gulf Oil Corp., the Texas Company and Atlantic Refining Co. at Port Arthur have under way programs designed to expand considerably their capacities for producing high octane gasoline for use in airplanes. Millions of dollars are represented in these undertakings, and the number of construction workers entering the area to take part in them runs into the thousands.

In addition to these major developments the plant of the Texasteel Manufacturing Co. has begun operating at Port Arthur with some 500 persons employed. The shipyards of the Gulfport Boiler and Welding Works have several hundred workmen engaged in the construction of millions of dollars worth of vessels for the U. S. Navy.

(Continued on page 54)



New Motion Pictures for Users of Steel

AVAILABLE WITHOUT CHARGE FOR GOVERNMENT USE, AIRPLANE PLANTS, TANK FACTORIES, TRAINING CLASSES AND ALL MAKERS OF COMBAT MATERIALS

Bethlehem Steel Company has just completed two motion pictures designed to assist metallurgists, producers and learners in plants making war materials.

The films have been planned, photographed, and edited under the supervision of leading technical men of the company.

The purpose of the films is to facilitate the efficient handling of steel in its conversion to war-time products.

The films, while simplified as much as possible for the comprehension of the learner, are not designed primarily for entertainment or popular educational value. Hence response to requests from general groups such as luncheon clubs and similar bodies, must be deferred pending our meeting requests from war plants and training schools.

WHAT THE PICTURES SHOW

The pictures are on 16 mm. film, with sound-track, each running for about 40 minutes. The subject matter includes the following:

STEEL FOR THE ARMED FORCES
PART 1
HOW STEEL IS MADE

Blast furnace, bessemer furnace and open-hearth operations.

Animated drawings of what takes place in the blast furnace and open-hearth.

Control of slag in the open-hearth.

Spectrographic analysis.

Still cross-sections of bessemer furnace, electric furnace, and cupola furnace in the foundry.

Standard rolling operations.

Hammer forges and press forges.

Iron and steel foundry.

STEEL FOR THE ARMED FORCES
PART 2
STEEL TREATING AND TESTING

Wire drawing.

Special testing procedures.

Close-ups of inspectors at work.

Preparation of steel for re-rolling.

Animated time-temperature charts showing heat treating sequences.

Standard spark testing procedure.

Stop motion photographs of sparks held at the characteristic point to indicate presence of various alloys.

PROMPT REQUESTS SOLICITED

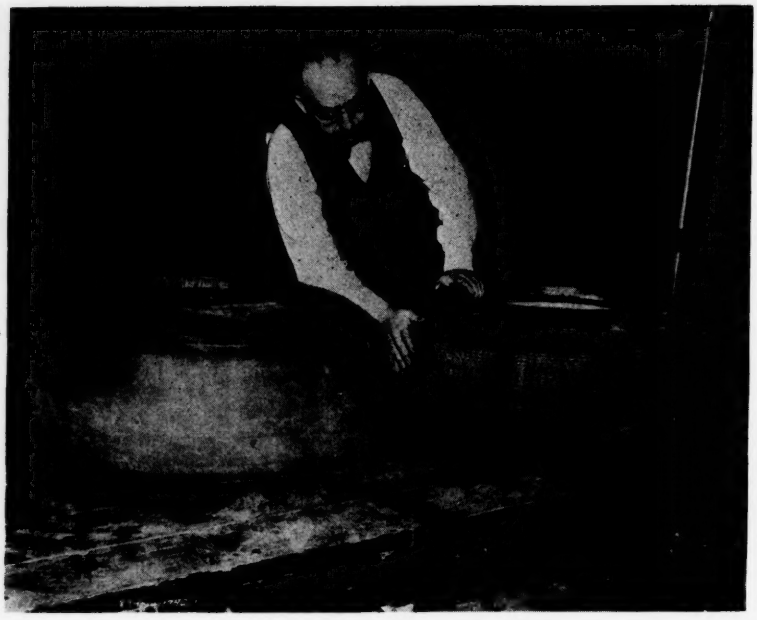
We shall make as many prints as necessary to supply promptly the requests from war producing and training groups. To lower our costs, any such groups are asked to apply for showings promptly so that we may estimate the number of prints which may be needed.

We also have a film library of special-product pictures such as the making of wire rope. Typical groups before which Bethlehem films have been shown in the past year:

Vought-Sikorsky Aircraft Corporation
Union Carbide and Carbon Company
Fleet Service Schools, Norfolk, Va.
San Antonio Air Depot
Springfield Armory
Watervliet Arsenal
Princeton University
Henry Ford Trade School
Purdue University
Inspectors School of Naval Material
Pennsylvania State College
University of Pennsylvania
General Motors Institute
Rensselaer Polytechnic Institute
Frankford Arsenal
Cleveland Ordnance District
University of British Columbia
Virginia Military Institute
Springfield, Ohio, Foremen's Club
Foster Wheeler Corporation
Sun Oil Company

BETHLEHEM STEEL

HOW TO ORDER—*If you represent a war material plant or training group kindly write stating position, name of group, dates you desire the films and optional dates. State length of time you desire to hold prints. There are no charges except return expressage. Address Motion Picture Office, Room 841, Bethlehem Steel Company, Bethlehem, Pa*



Wire Spirals in Airplane Tire Treads Prevent Skidding

Designed to prevent skidding on snow and ice, a new type airplane tire whose tread comprises thousands of steel-wire spirals in each tire is now in production for U. S. Army planes. Embedded directly into the tread of each tire, the wire spirals supplement the tread's non-skid function.

In the first step toward producing a tire of this type, the wire coils are strung on steel rods to be transferred in parallel rows to rubber mats. The mats are linked together with cement into a strip long enough to cover the surface of a customary airplane tire carcass. Then the carcass is placed in a mold in the normal manner. As the tire carcass is vulcanized, the thousands of wire coils become integral parts of the tread itself, scarcely noticeable in the tread when the tire leaves the mold.

Extensive tests of the new tires have indicated their complete feasibility where protection against skidding is needed, according to the Goodyear Tire and Rubber Co., whose officials made the announcement.

24-Inch Pipeline to Illinois Officially Opened

The Texas-Illinois section of the 24-inch War Emergency Pipeline to the East Coast was opened officially on February 19, at Norris City, Ill.

The first batch of oil to be moved through the pipeline and trans-shipped eastward by tank car was crude oil from the East Texas field. Subsequent movements will consist of alternate loads of crude and fuel oils.

Capacity operation of the 531-mile first leg of the line, expected within the next six to eight weeks, will deliver 300,000 barrels of petroleum daily at the Norris City terminal and via interconnecting lines for shipment to Eastern War products refineries and distribution terminals.

Meanwhile, construction work started February 15, on an additional section of the 857-mile Illinois-East Coast extension of the 24-inch pipeline when construction crews "set in" in the mountainous region near Chambersburg, Pa., on one of the twenty working spreads into which the 857-mile construction job has been divided.

Full-scale construction work is now under way along more than 200 miles of the Eastern Pennsylvania and Western New Jersey route of the "big inch." Additional construction is progressing rapidly on similar sections in Illinois, Indiana and Ohio.

Aluminum Company of America Issues Lower Price Schedule

As a result of a renegotiation agreement entered into with the Government, Aluminum Company of America is making effective on March 1, 1943, a new and lower schedule of prices for semi-fabricated and fabricated aluminum, it is announced by Roy A. Hunt, president of the company.

Mr. Hunt stated that increased volume of production together with new and improved technique and equipment have greatly reduced many costs and therefore Alcoa considers as reasonable the requirements in its renegotiation agreement which eliminates those profits which the Government felt were excessive and which, unless prices are lowered, would continue to accrue.

Sub-Contractors Wanted

For information, blue prints, specifications, etc., on the following items write or telephone the Philadelphia or Baltimore office of the War Production Board, quoting the symbol number of the item in question. You will then be put in touch with the engineer assigned to that item. Please quote the Manufacturers Record.

Ref. Buescher-6-1

A Penna. concern requires subcontracting facilities for the machining of reciprocating STEAM ENGINE CYLINDERS. Equipment required: 6' Radial Drill, Vertical Boring Mill 146" swing, 73½" under bar, Planer 104" width with side and top heads. Overall dimensions: 93.5" x 104" x 73½" high. Cylinder Bore—Diameter 70". Depth 52⅝". Material: Semi-Steel. Castings will be furnished.

Ref. Buescher-6-2

A Government Agency requires two types of GUIDE VALVE TAPPETS. Total quantity: 15,500 pcs. Delivery: 800 to 1000 of each item per month. Equipment required: Automatic Screw of Hand Screw Machine, 1.250" Spindle, #1 Milling Machine, Drill Press, Sensitive, Cylindrical, Surface, Internal Grinders, Cylindrical Hones or Laps, Case Hardening. Dimensions O. D. 1.125", length 3.5", Bore—Type A .6876" plus or minus .0005", type B—.6863", plus or minus .0005", other tolerance .001". Material: Type A.—SAE 3115. Type B—SAE 4615. Material will be supplied to the contractor.

Ref. Buescher-5-1

A Western Corporation requires facilities for DIESEL ENGINE CRANKSHAFTS—three per month for the duration. Equipment required: Crankshaft Lathe, and Grinder, Milling Machine, Drill Press. Overall Dimensions: Length 14', 9¾", Throw 9½". Main Bearing—9.250", Crank Bearings —9". Tolerance .002". Material: Steel SAE 1035. Prime Contractor has small quantity of forgings and others must be furnished by subcontractor.

Ref. Buescher-5-2

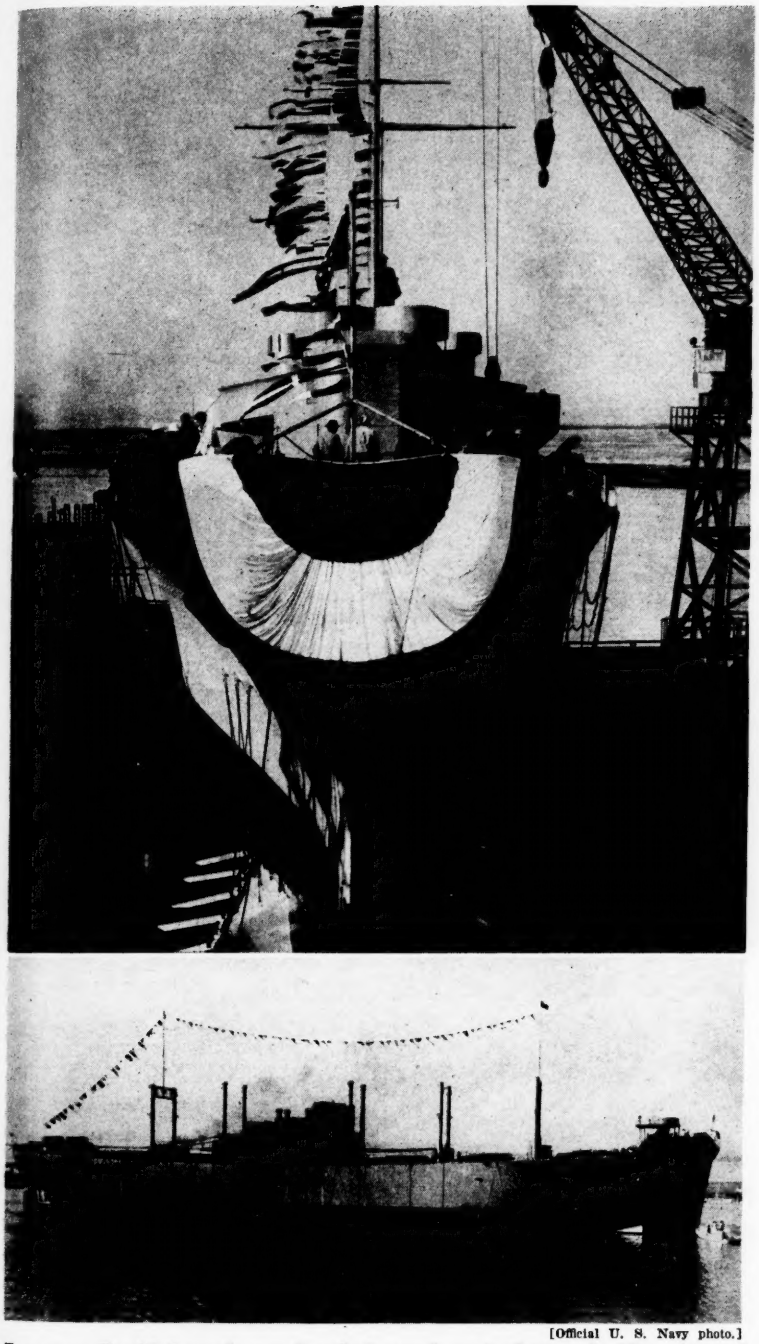
A Western Corporation requires 18 DIESEL ENGINE CYLINDERS per month for the duration. Equipment required: 3' Radial Drill Press, Vertical Boring Mill, 46" Swing, 3' 9" Under Head; Planer, Bed, 4" wide. Overall Dimensions: 24" x 34 3/16" x 40" high. Tolerances: Bottom Bore Diameter 16.500"—.001, 4" Length, Top Bore Diameter 16.750"—.001 1¼" Length. Material: Cast Iron. Castings to be furnished by contractor. Prime contractor has small quantity at present. Also, CYLINDER LINER for above cylinders. Overall length: 3' 8½" x 17.616 diameter. Equipment—required: Boring Mill, 46" Swing, Rough Bore. Finish: bore 14.000 .003 after insertion in cylinder. Engine Lathe, 24" Swing—4' between centers; 10 ton arbor press. Material: Nickel Chrome Iron to be furnished by contractor.

Ref. Keefer-2-2

A Pennsylvania manufacturer requires subcontracting facilities to produce 200,000 "HEADS" monthly. Production to start during February. Equipment required: Multiple Spindle Screw Machines. Material: Steel WD-1020 or WDX-112. Dimensions: Length 1.00"—O. D.—.615" Tolerances .001 and .002. External threading.

Ref. Buescher-1-1

A Penna. manufacturer requires additional facilities for machining the TOP CAP AND ADJUSTING CAP for 60,000 lb. universal testing machine. Equipment required: Horizontal Boring Machine 2" or 3" bar; Planer 24" wide; Drill Press; Slotter; Milling Machine #4. Tolerance: plus or minus .002. Experience required: Deep Boring. Bore Diameter 1¼", Length 33½". Overall Dimensions: 41¾" long x 9" wide x 7⅜" high. Material: Cast Steel. Castings will be furnished.



[Official U. S. Navy photo.]

Two more all-welded vessels were launched recently at the Pascagoula, Miss., shipyards of the Ingalls Shipbuilding Corp. First to go down the ways was the U. S. S. Monitor, a mine and net layer shown at top. Below is seen the S. S. Sea Panther, the second ship to be launched on the same day as the Monitor. The latter was sponsored by Mrs. Walter F. George, wife of Senator George from Georgia.

Mississippi River's First Streamlined Ship Launched

When the "SOHIOAN," most powerful diesel towboat on the Mississippi River system, was christened recently at St. Louis, another link was welded in the chain for transporting crude oil from the fields in the South to refineries in the North and East.

Built for the Standard Oil Company of Ohio by the St. Louis Shipbuilding and Steel Company, the "SOHIOAN" will push approximately a dozen barges loaded with crude oil from the lower Mississippi to pipelines in the upper river which will carry it on eastward.

The "SOHIOAN," with a total of 2400 H. P., has three diesel engines and is the first streamlined ship on the Mississippi. She is 160 ft. long, has a beam of 38 ft., and will use crude oil for fuel. Accommodation has been provided for a crew of 22.

Freeport Sulphur Co., Sets Up Post War Job Fund

A reserve fund to help provide post-war jobs for its employees now in the armed services has been created by the Freeport Sulphur Co. Langbourne M. Williams, Jr., president of the company, in making the announcement said, "The Freeport management looks forward to an expanding period of constructive service after the war, but there will inevitably be a period of readjustment when the men from the armed services are being absorbed into private employment. Just as soon as our employes are released from the service and once again want to work for us, we want to have their old jobs or comparable ones waiting for them.

"It may be that our business will have declined at that time and our profits have diminished; for that reason we are setting up a reserve so as to make sure just as far as we possibly can that we shall have the resources to provide re-employment for our men."

Contracts For 19 Vessels Award To Three Gulf Coast Firms

Contracts for construction of 19 coastal cargo vessels have been awarded to three firms located on the Gulf Coast, the Maritime Commission announced recently.

The firms given the contracts are: Pennsylvania Shipyards, Inc., Beaumont, Texas, nine vessels; Avondale Marine Ways, New Orleans, Louisiana, six vessels, and Pendleton Shipyard Co., New Orleans, Louisiana, four vessels.

Each ship is to be 258 feet long, with a beam of 42 feet. The contracts are on a price-minus basis, at a price of $950,000 per vessel. All but three of the ships are to be delivered in 1943.

January War Expenditures Average $240,500,000 Daily

War expenditures by the United States Government totaled $6,254,000,000 in January. This was $129,000,000, or 2.1 percent, higher than in December and 185 percent greater than in January 1942.

The average daily rate of expenditure in January was $240,500,000, compared with $235,600,000 in December. The daily rate is based on the twenty-six days in January and December on which checks were cleared by the Treasury. In January, 1942, $81,200,000 were spent daily for war purposes.

The figures cover expenditures both by the Treasury and by the Reconstruction Finance Corporation and its subsidiaries.

Ingalls Shipbuilding Corp. to Build Six Vessels

Contracts for the construction of 14 coastal cargo vessels have been awarded to two firms located on the Gulf Coast and the Great Lakes by the Maritime Commission.

The Ingalls Shipbuilding Corporation, Decatur, Ala., will construct six of the vessels on a fixed-price basis of $950,000 per vessel and the Barnes-Duluth Shipbuilding Corporation, Duluth, Minn., will construct six ships on a price-minus basis of $950,000 per ship. All 14 ships will be delivered into service this year.

Seventy Percent of War Work Contracted to 100 Concerns

That 100 war contractors hold 70 per cent of the dollar volume of prime contracts, or $59,557,900,000, at the end of November, 1942, is shown in a War Production Board analysis of individual supply contracts of $50,000 or over.

At the end of June, 1942, says the WPB announcement, the top 100 companies held 71 per cent of the dollar volume of these contracts. Earlier studies based on Army, Navy and Maritime Commission contract awards at the end of February, 1942, indicated the top 100 concerns held 76 per cent of the dollar volume, and at the end of September, 1941, 83 per cent.

The awards are for airplanes and parts, naval and merchant ships, guns, ammunition and other munitions items. The figures cover the war contracts reported as awarded by the Army, Navy and Maritime Commission since June, 1940, and by foreign purchasing missions since September, 1939. The defense aid awards of the Treasury are included.

Twelve of the top 100 corporations in November were not among the leading 100 in June. Of the total value of supply contracts reported as awarded between the two periods, 70 per cent went to the 100 corporations in the November listing and 66 per cent went to the 100 corporations in the June tabulation.

The distribution of war work is widened by the extent to which these companies subcontract jobs to other manufacturers. However, a considerable portion of subcontracts awarded by all other prime contractors goes to the 100 corporations.

S. A. S. I. To Meet In Birmingham

The annual meeting of the Southern Association of Science and Industry will be held at the Tutweiler Hotel, Birmingham, Ala., from April 22 to 24. General meetings will be confined to one day, April 23, when the principal feature will be the presentation of noted scientists and business men in a discussion of the future of Southern industry with emphasis on the post-war utilization of the South's industrial war plants.

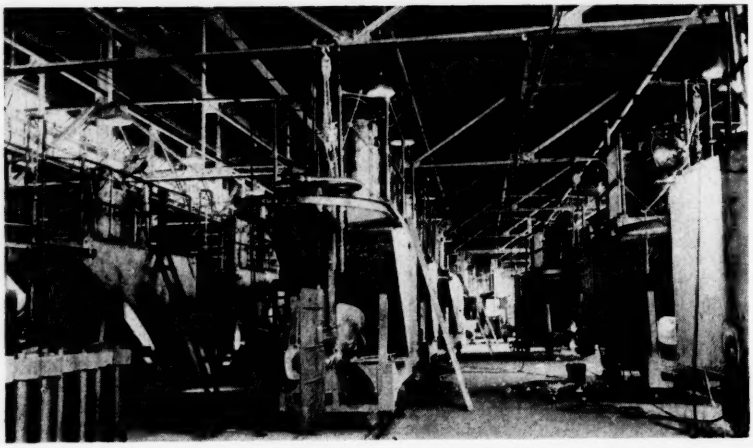
Grain Shipments at Record High

Rail shipments of grain and grain products are running at a higher rate than ever before for this season of the year, and, in fact, are heavier than at harvest time in mid-summer of 1942, an analysis of the weekly carloadings statements of the Association of American Railroads reveals.

During the 10 weeks from December 5, 1942, through February 6, 1943, loadings of these commodities totaled 464,937 cars—or 14.8 per cent above the corresponding period a year ago and 7.4 per cent more than in the peak grain-loading period from June 6 through August 8, 1942.

Present heavy loadings of these products are due to greatly increased movements of grains to flour mills and to distilleries for the manufacture of alcohol for war production.

Marine tractors or "sea mules" under construction. The model shown in the foreground is the 2-A, large numbers of which already have been delivered. This unit, designed by David A. Wallace, president of the Chrysler Corp. Division, in one of whose plants these are being made, can be attached to any barge, scow or other flat-bottomed carrier to give it independent locomotion. Rudder and propeller can be raised or lowered as desired.



Trans-Florida Pipeline Completed

The new trans-Florida pipeline is now being filled with gasoline at its western end and the line is expected to be in actual operation in the very near future.

Except for a few miscellaneous installations, laying of the 199-mile eight-inch line between Carabella, on the Gulf Coast, and Jacksonville, on the Atlantic Coast, has been completed.

The project is one of several in the comprehensive program to increase the flow of crude oil and refined petroleum products to the supply-shortened Atlantic Seaboard. All materials used in its construction were second-hand, the pipe, pumps, and storage tanks used having been transferred to war duty from service on a pipeline system in Texas.

At the outset, the trans-Florida line will be used as a gasoline carrier only. Later, it will move other light petroleum products as well. These will be transshipped from Jacksonville in barges via the intra-coastal waterway to consuming centers along the coasts of Florida, Georgia, and the Carolinas. There will be some truck distribution from Jacksonville, too.

Capacity of the line will be approximately 30,000 barrels a day. The project was financed by the Defense Plant Corporation at a cost of about $3,360,000 and will be operated by the Trans-Florida Pipe Line Company acting as agent for and in behalf of the Defense Plant Corporation.

Hyatt Plastics Award Entries Close March 15

The closing date for nominations for the second annual John Wesley Hyatt Award, to be presented for an outstanding contribution to the plastic industry in 1942, has been set as March 15, according to an announcement from William T. Cruse, committee secretary.

All individuals contributing to the plastics industry are eligible for the award, which consists of $1,000 and a gold medal donated by Hercules Powder Company, manufacturer of plastics raw materials.

The committee follows: Richard F. Bach, Dean, Education and Extension, Metropolitan Museum of Art, New York; Dr. Lyman J. Briggs, Director, National Bureau of Standards, Washington; Dr. Karl T. Compton, President, Massachusetts Institute of Technology, Cambridge, Mass.; Watson Davis, Director, Science Service, Washington; Dr. Per K. Frolich, President, American Chemical Society, Bayway, N. J.; Eric Hodgins, Editorial Vice President, Time, Inc., New York; and Ronald Kinnear, President, Society of the Plastics Industry, New York.

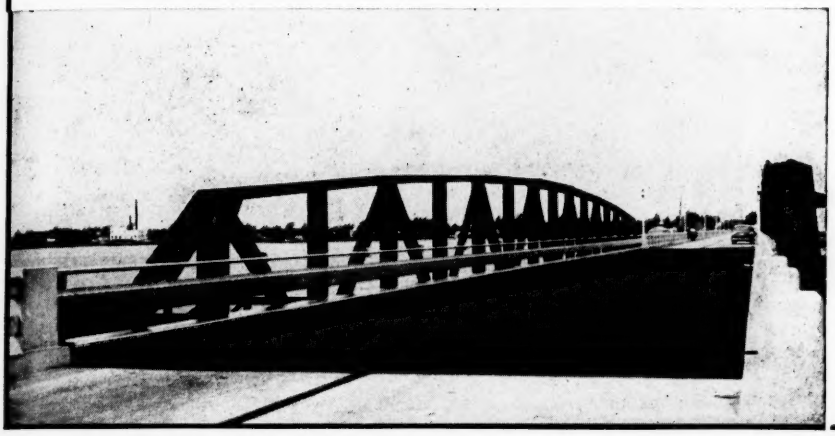
This Month's Cover

The two paragraphs quoted on the front cover of this month's issue of the MANUFACTURERS RECORD are taken from the United States Supreme Court decision of 1886 in the famous case usually referred to as "Ex Parte Milligan."

Electric Arc Welded Swing Span Bridge

for Florida State Road Department at Ft. Pierce, Florida

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COMPANY

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Capacity 1000 Tons per Month. 3000 Tons in Stock

Carolina Steel and Iron Company
The Largest Steel Fabricators in the Carolinas
Greensboro North Carolina
S. C. Rep. Edward McCrady, 307 Allen Bldg., Greenville, S. C.

New Methods and Equipment

New Benjamin Floodlighting Projectors

To meet wartime needs for protective floodlighting and lighting of yards, areaways and other outdoor work places, a new type RDS Floodlighting Projector is offered by the Benjamin Electric Mfg. Co., Des Plaines, Ill. Replacing the Benjamin Type RD Projectors, these units embody all the features of the previous models with the exception that all parts formerly made of aluminum or other nonferrous metals are now furnished in steel



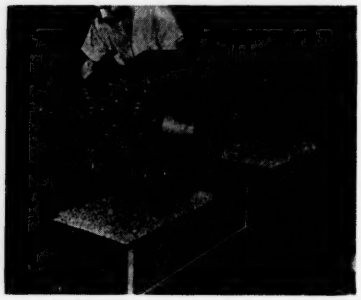
or cast-iron specially treated by procelain enameling, and other rust-proofing to render them resistant to corrosive atmospheric influences and weathering.

These new RDS units are furnished in two models. The RDS 14 for 300 watt and 500 watt general service lamps or 500 watt floodlighting lamps. The RDS 18 for 750 watt and 1000 watt general service lamps or 1000 watt floodlighting lamps. Each model is supplied with plain, stippled or ribbed, heat resisting glass covers.

A New Rivet Sorting Machine

A new rivet sorting machine, which is resulting in a daily saving of hundreds of thousands of vital aircraft rivets, has been developed and placed in operation by Fisher Body Division of General Motors. The machine is in reality a battery of four machines. Each has a primary selector, which is a perforated, revolving cylinder. The perforations in each of the cylinders are of different sizes, so that the rivets which fall through from each of the four cylinders are grouped according to thickness, regardless of their length or head type. The cylinders are interchangeable, so that there is one cylinder to fit every rivet thickness being used in the plant.

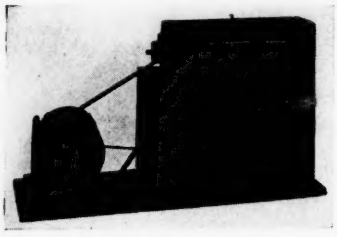
After they have been sorted according to thickness, the rivets are dropped into a hopper from which they are carried on a pronged trough to the next selection operation. At the bottom of the trough the rivets, with their heads upward, reach a flat, disk-like selector which is notched and revolves constantly. Each



rivet slides into one of the notches. Then, as the selector turns, the various head types are kicked off by the selector arms. If the machine is set for selection of round head rivets, all other types are kicked off into a container, the round head rivets continuing on for selection as to length. Then it is set for flat head rivets, the remaining types are kicked off, and the flat head rivets are sorted according to length, and so on. The final phase of the operation sorts the rivets according to length.

New Positive-Type Vacuum Pump

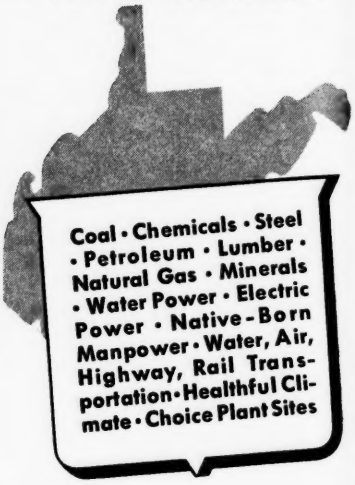
A positive-type vacuum pump for production and laboratory applications has been announced by American Automatic Typewriter Co., 614 N. Carpenter St., Chicago. Available in two standard sizes, the pump, which is supplied with individual electric-motor drives, or without motors for use with an available power source, employs four bellows mounted within a square wood frame, connected to each other and to the pump outlet by a channel running through the frame. Bellows, which are successively expanded to exhaust air or gas from the equipment to



which the pump is connected, are driven by a revolving shaft through connecting straps. The shaft is V-belt driven at a relatively slow speed, approximately 200 RPM, contributing to a smooth quiet running unit and low maintenance.

The larger of the two units is rated at 15 cu. ft. displacement at four inches of mercury. Bellows are six inches wide, and pumps individually driven use a ½-horsepower motor. The smaller unit, rated at 7 cu. ft. displacement at four inches of mercury, has 4-inch bellows and uses a 1/6-horsepower motor. The pumps are equipped with governors to vary their capacities, and to prevent excessive wear on pump parts, the power

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Vital Today in Wartime ...Tomorrow in Peacetime

Today West Virginia's natural and man-made resources are going to war—every industrial advantage is being used to speed the nation's production for Victory. Coal, petroleum, natural gas, chemicals, timber, agricultural products—all are in the fight.

Tomorrow these assets, which have helped establish West Virginia as the "State of Industrial Opportunity," will again be turned into the channels of peacetime production. Coupled with an efficient rail, highway, water and air transportation system, abundant native-born manpower, a strategic geographical location, and a wide choice of plant sites, these resources are of vital interest to the executives who are shaping tomorrow's production plans today. Write for full information about West Virginia's industrial opportunities!

Coal and Chemical Center of the Nation

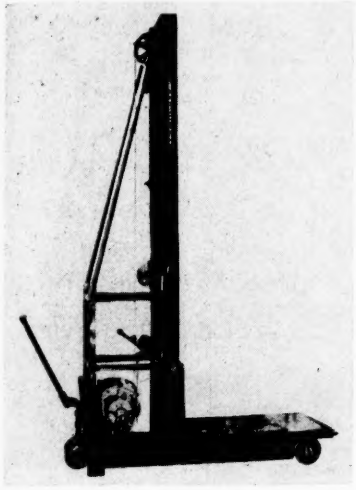
WEST VIRGINIA PUBLICITY COMMISSION
Box 7, Capitol Building
Charleston, West Virginia

transmission unit or the motor when air or gas has been exhausted to the capacity of the pump.

Air Power Stacker For Use Near Explosives

A portable elevated, the Air Power Stacker, is being featured by the Lewis-Shepard Sales Corp., Watertown, Mass., for use in connection with various hazardous operations. Claimed to be safe, fast and efficient in all explosive atmospheres, this Stacker is powered by a rugged air motor and will operate at the same air pressure and volume as industrial overhead air hoists.

Control of the platform is at the opera-



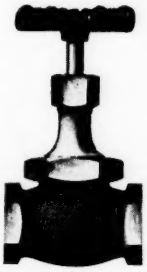
tor's finger tips so that any speed of lifting or lowering between the maximum top speed and zero is instantly obtainable, while a "Dead Man" cable control stops the air motor and platform the instant the operator removes his hand from either one of the dual, holdover controls. These Stackers are produced in the same speeds and capacities as the standard Lewis-Shepard line of electric powered stackers; also in standard hinged and telescopic types for safety.

General Electric Markets New Outdoor Transformer Line

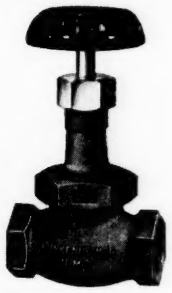
A new line of two-bushing outdoor potential transformers, Type E-236, rated 24 to 69 kv, 50/60 cycles, which effect substantial reductions in size, has been announced by General Electric Co., Schenectady, N. Y. The height of the new transformers (which supersede the Type E-116) has been reduced 15 to 50 per cent, weight has been reduced 10 to 60 per cent, and liquid volume, 45 to 90 per cent, depending on the rating of the transformer. These reductions mean that the transformers can be mounted up in the substation structure with the small-size G-E current and single-bushing transformers. Mounting in the structure simplifies primary (high-voltage) connections, saves ground space, and eliminates the need for a separate foundation. The new transformers have no gaskets. They are hermetically sealed by means of sealed bushings, all-welded steel tank, and sealed-in-glass secondary terminals. They can be supplied filled with either Pyranol or oil.

Lunkenheimer Valves

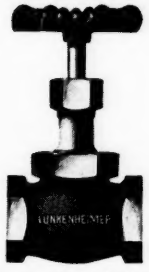
Vital Helps to Industry's Needs



Bronze "Renewo"
200-300 lb. S.P.



Bronze "N-M-D"
Non-Metallic Disc
150 lb. S.P.



Bronze Regrinding
200-300 lb. S.P.



Iron Body "Ferrenewo"
150 lb. S.P.



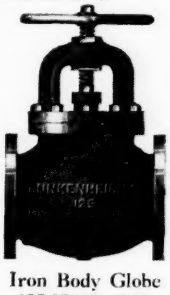
Bronze Gate
Double Wedge Disc
125-150 lb. S.P.



Bronze Gate
Single Wedge Disc
125-300 lb. S.P.



Iron Body
"King-clip" Gate
150 lb. S.P.



Iron Body Globe
125-250 lb. S.P.

Illustrated are a few of the many types of Lunkenheimer Valves helping to produce vitally needed equipment for the Army, Navy, Maritime Commission and Air Force and other war agencies.

They're part of the complete line of valves made by Lunkenheimer for every industrial process—of bronze, iron, steel and corrosion-resistant alloys—from tiny needle types to massive power-plant valves—for 125 to 2500 lb. S.P.

A further help is Lunkenheimer's nation-wide distribution through leading supply houses. Wherever there's war activity there's a Lunkenheimer distributor serving it. Ask for Catalog 78 and the Guide for selecting Valves.

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BOILER MOUNTINGS, LUBRICATING DEVICES, AIRCRAFT FITTINGS

28-106C-62

Industrial News

New Chief Metallurgist For Tube Turns

The appointment of Fred C. Smith as Chief Metallurgist, effective January 18, has been announced by Tube Turns, Louisville, Ky. From 1936 to the date of his present affiliation with Tube Turns, Mr. Smith was employed by Carnegie-Illinois Steel Co., at Chicago, as Field Metallurgist. Prior to that he was Plant Metallurgist for International Harvester, at Fort Wayne and Chicago Plants. Well known in the metallurgical field, he was elected vice-president of the American Society for Metals in 1942 and is a member of the American Society of Automotive Engineers and other technical organizations.

J. A. Ireland Appointed Assistant General Sales Manager

The promotion of J. A. Ireland to assistant general manager of sales of the Steel and Tubes Division of Republic Steel Corporation is announced by J. V. Burley, general manager of sales. Previously occupying the position of division sales manager, Mr. Ireland started with Steel and Tubes in 1922 in the operating department. From the operating department he was transferred to the sales department and was successively salesman, Central District sales manager and division sales manager.

Another Use For Steel Gratings

C. H. Lewis, vice-president and general manager of the Irving Subway Grating Company, Long Island City, illustrating the wide variety of uses for steel gratings, states that his company will fill an order, providing the necessary priorities are obtainable, for steel grating panels to be laid on wooden risers by a poultry concern. It is believed that this will permit greater sanitation and allow the grating sections to be removed easily for cleaning.

American Institute of Steel Construction Elects New Secretary

Robert B. Thomas has been elected Secretary of the American Institute of Steel Construction to succeed Mr. V. G. Iden who has joined the staff of the Bureau of National Affairs of Washington, D. C., it was announced recently by Robert T. Brooks, Executive Vice-President of the Institute. Mr. Thomas will continue as General Counsel of the Institute, the duties of the two offices having been combined for the duration in the interest of conservation of manpower.

Inland Steel Chief Get Degree

Illinois Institute of Technology has conferred an honorary doctor of engineering degree upon Wilfred Skyes, president of the Inland Steel Company—for industrial achievement—at its 1943 commencement held five months ahead of schedule. James D. Cunningham, president of Illinois Tech's board of trustees and president of Republic Flow Meters, presented the degree. Mr. Sykes delivered the commencement address to the class of 294 seniors, 262 of whom were engineers.

"Engineers as part of our social organization," he told the graduates, "cannot escape the responsibility of playing a part in the government of our country. Our governmental problems will become more and more complex and the technically trained men will be the best fitted to find solutions. They should be in the position to guide policy.

"We can never have a successful government that is based on slogans and dogmas. They are no substitute for informed and logical thought. The only sound way is to use the scientific methods that we follow in our profession. How different is this from our current practice.

"All governments are becoming complex because of yielding to pressure groups seeking selfish ends, and eventually we face the danger of degenerating into a bureaucratic dictatorship, for which no doubt some fine sounding name will be found, but which will gradually deprive us of our real freedom. The freedom to be individuals. Freedom to follow our destiny as we conceive it, not as someone else plans it. Freedom of initiative and freedom of enterprise. Freedom to retain our cherished institutions.

"You men will have to play your part if these trends are to be changed and this country is to remain the place where you will want to live and where you and your children can enjoy our natural blessings and you may gather freely the fruits of your labors."

Goodrich Awarded 66-Mile Conveyor Belt Order

The largest single order for convevor belt ever written in the history of the rubber industry—totalling more than 66 miles—has been awarded to the B. F. Goodrich Company, it is announced by W. S. Richardson, general manager of the company's Industrial Products division. The belt, part of a huge war order placed recently, will go into production immediately in one of the company's plants now engaged in the manufacture of rubber and synthetic rubber products for the armed forces. It will require 50 standard railroad cars to move the shipment when completed.

Norton Company Appointments

J. P. Enright has been appointed Abrasive Engineer for Indianapolis and the vicinity by Norton Company, Worcester, Mass.

Robert W. Crawford has been appointed a Norton Abrasive Engineer in the Pittsburgh territory taking the place of William A. Russell who is now an ensign in the U. S. Navy.

Trade Literature

STEEL STRAPPING—

Booklet—"Acme Process News, No. 10," features various uses of steel strapping employed outside of the usual peacetime application. Holding bullet sealing materials in airplane fuel tanks, strapping anti-aircraft shell tubes, parachute flare parts, army cots, compressing bales of wool to meet minimum freight requirements and "packing" oil pipeline for North Africa, are a few of the many illustrations and descriptions, which will be of more than passing interest to shippers.

Acme Steel Co., 339 St. Paul Place, Baltimore, Md.

(*Continued on page* 50)

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Structural Steel for all Industrial Structures, Buildings and Bridges

LARGE STOCK FOR IMMEDIATE SHIPMENT

Bristol Steel & Iron Works, Inc.

STRUCTURAL STEEL

For Buildings, Bridges and All Industrial Purposes

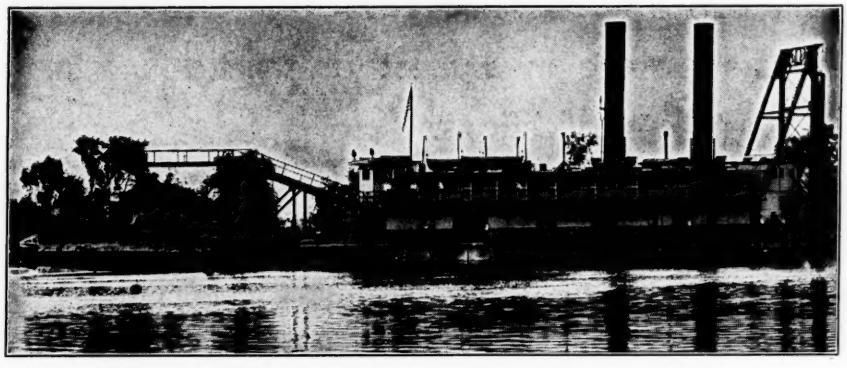
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Correspondence invited from corporate and private interests everywhere.

Contractors to the Federal Government

ATLANTIC GULF AND PACIFIC CO.

NEW YORK: 15 Park Row HOUSTON, TEXAS: Citizens State Bank Bldg.

Trade Literature

(*Continued from page* 48)

VISIBLE RECORD EQUIPMENT—
Folder—"Steel Has Gone To War" announcing and illustrating "Administrator" Kardex and Kolect-A-Matic visible record equipment made of wood in place of the metal Kardex for which steel is no longer available.
Remington Rand Inc., Buffalo, N. Y.

WELDING ALUMINUM—
Manual—"Welding and Brazing Aloca Aluminum, 1942" is a completely rewritten edition of the manual issued at this time to conserve aluminum and speed production through disseminating detailed information on how to correctly use and work aluminum. Fully illustrated, with diagrams and tabular specifications.
Aluminum Company of America, Pittsburgh, Pa.

ZINC-COATED SHEET METAL—
Booklet—"Useful Facts About Armo Linegrip" contains fresh information on Armco Linegrip and helpful suggestions on specifying, ordering, fabricating and finishing this metal. Also includes sections dealing with physical properties, deep drawing, roll forming, brake forming, welding and soldering.

AUTOMATIC CONTROL—
Catalog—N-OOA, "Micromax Electric Control" describes control equipment for handling any process which can be controlled by positioning a valve or other regulating device. Diagrams and text explain in detail how the equipment is adjusted to fit the needs of a particular process.
Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Pa.

Uses for Treated Wood Expanding

Newly developed improvements in the treatment of wood to make it fire resistant and still paintable have helped to make forest products a major heavy construction material over the past year, according to W. F. Munnikhuysen, head of the Wood Preserving Division of Koppers Company. Such timbers were becoming more common in large buildings before the war, and because of shortages of other permanent construction materials their use was greatly accelerated in 1942.

One of the most important wartime uses of wood has been in construction of plants important to war production. In many instances this use of fireproofed timbers has released critically needed steel for other purposes. In other instances the buildings would not have been erected at all because of steel shortages, or would have been delayed many months. Construction of warehouses, troop barracks, boats and barges, munitions factories and war housing has been made possible by engineering improvements in utilizing wood, as well as by pressure treatments to make it a permanent construction material.

In Baltimore a complete anti-aircraft gun carriage assembly plant was built of treated wood in 90 days. Immense hangars have been built with very little steel to house Navy blimps used in coastal patrol work, and more of these are now being erected. These structures are as high as a 17 story building and have a clear timber arch of 246 feet—a new record for this type of construction. The huge spandrel-braced arches, composed of timbers bolted together in chords, are said to have a pound for pound tensile strength equal to mild steel and to have an even greater resistance to reduction in strength caused by fire. Approximately 150 carloads of lumber and timber processed for fire retardance go into the building of each of these hangars.

A 700-foot Navy pier containing 42,700 feet of creosoted piling was built in 43 days—47 days under the peacetime record for such construction. Another wartime use for treated wood has been in the decks of airplane tenders. The Army now uses approximately 400 items in wood which it formerly used in steel.

The already well established uses of treated wood in bulkheads, runways, bridges, culverts, railroad cars, railroad crossings, ties, piling and telephone poles continued and expanded in 1942. Wood used for these purposes is being treated under several processes and with various chemicals, depending on the construction use that is to be made of it.

Domestic Oil Shale Reserves

Preparing for the time when the United States may have to utilize domestic oil shale reserves as a source of gasoline and other petroleum products, the Bureau of Mines has issued a detailed report (Information Circular, 7218) describing proposed methods of mining shales in Garfield County, Colo., where the Bureau already has produced shale oil in experimental retorts.

NATURAL GAS

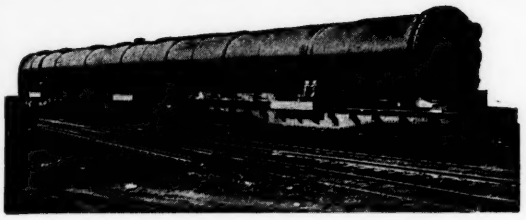
A fuel whose value has been proven by years of use in a most diversified line of industrial applications.

Natural gas has created the possibility of effortless comfort by the facility, and economy with which it fits into the home.

SOUTHERN NATURAL GAS COMPANY

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High Pressure Vessels of Quality Steel

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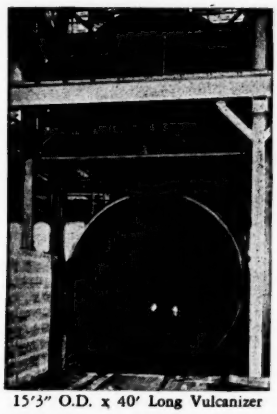
Tanks
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ESTABLISHED 1854
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ELEVATED TANKS — PRESSURE TANKS — STEEL STORAGE TANKS — PROCESS TANKS — BUTANE-PROPANE TANKS—STANDPIPES—RETORTS—BINS — EXTRACTORS — BARGES — DREDGE PIPE AND ACCESSORIES — WELDED PIPE — RIVETED PIPE.

General Steel Plate Construction designed for your requirements.

LANCASTER IRON WORKS, INC.
LANCASTER, PENNSYLVANIA

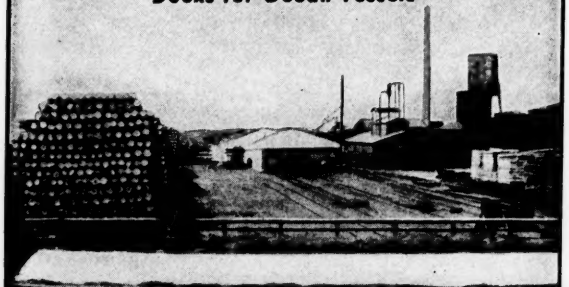
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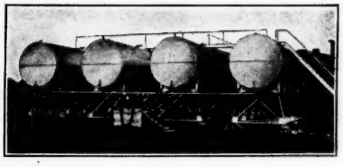
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This applies to field as well as shop built equipment.

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H. K. Porter Company Awarded New Equipment Contract

Defense Plant Corp. has authorized a contract with H. K. Porter Company, Inc., Pittsburgh, Pa., to provide equipment for a plant in Pennsylvania at an approximate cost of $100,000, according to the Office of the Secretary of Commerce. The facilities will be operated by H. K. Porter Company, Inc., with title remaining with DPC.

The Part of Trucks in the War Effort

(*Continued from page* 33)

Associated Transport weld, metallize and in other ways reclaim all possible parts. The entire highway transportation industry is deeply concerned with making every piece of equipment and every part produce the maximum mileage.

Trucks offer war-time manufacturers the same efficient, economical transportation they provided during peace. Today the trucking industry is moving more freight than ever before. Figures released by the American Trucking Associations for recent months show large increases over similar months a year ago. And 75 per cent of all common carrier truck traffic consists of war freight. That is the measure of its contribution to victory.

Plastics for South Carolina

(*Continued from page* 31)

minor constituents, the residue will be pure cellulose, from which paper or cellulose plastics may be made. If only the hemi-cellulose is removed, leaving the lignin and cellulose material, the result is a lignin-cellulose mixture which can be molded, with or without the addition of plasticizers. The remaining lignin acts as a binder and may be utilized as such.

Soybean Processing for South Carolina

The market and demand for soybean products, especially soybean protein for casein, is now extremely favorable for the establishment of a processing plant in South Carolina.

The possibilities of extracting protein from soybeans in a commercially practicable fashion has been demonstrated recently. Studies in the Soybean Research Laboratory at Urbana, Ill., indicate that casein manufactured from soybean protein is fully equivalent in adhesive qualities to those of milk casein.

Casein in the past has been obtained from milk. Should casein and casein products be manufactured from soybeans, millions of tons of milk now being used for this purpose would be made available for other purposes.

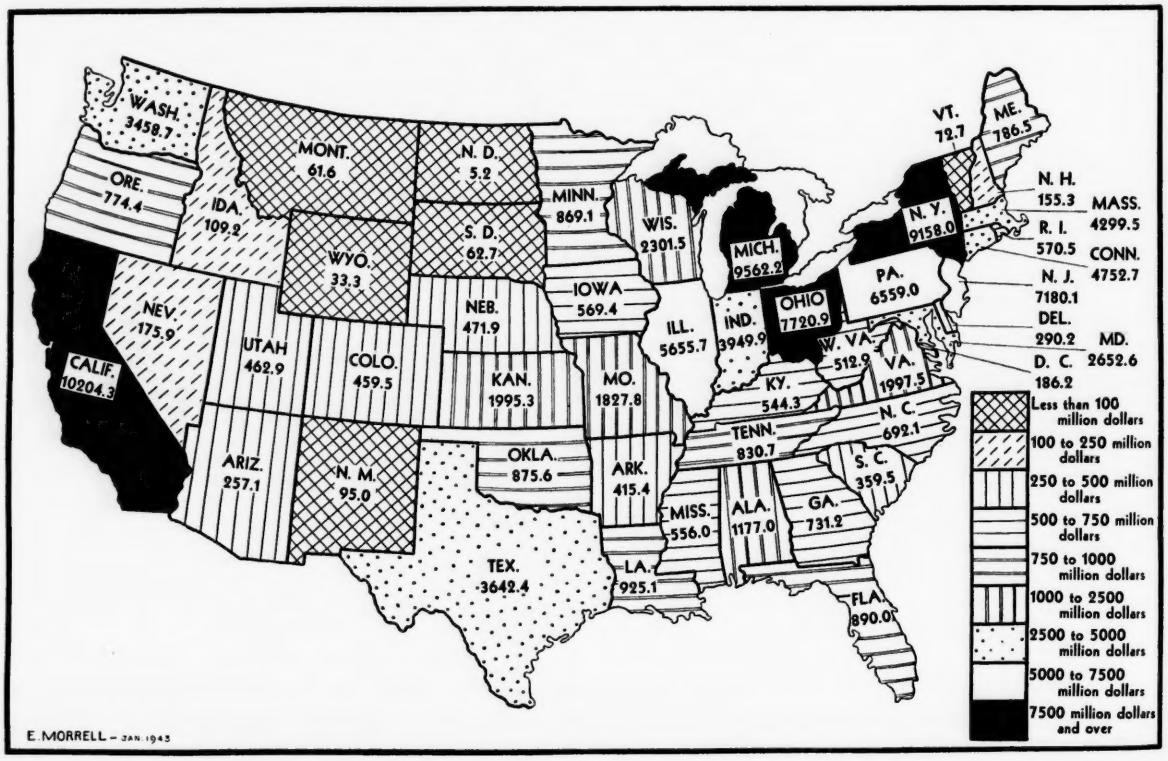
Uses Of Casein

Casein may be classified as a plastic. About 75 per cent of the domestic consumption is utilized

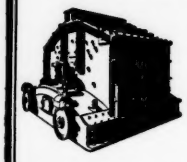
(*Continued on page* 54)

Due to circumstances beyond our control, the compilation of statistics concerning War Contracts and Allocations to Southern States for the period June, 1940, through November 1942, which would normally appear here, has been unavoidably delayed. Readers who particularly wish to have this information will be provided with a copy upon written application as soon as it is available. This feature of the Manufacturers Record will be continued. For the benefit of those who do not have a copy of the February Manufacturers Record we are reprinting below last month's statistical map.—Editor.

The total value of war contracts and allocations by all Federal agencies and foreign purchasing missions was $114,179,955,000 ***for the period September*** 1939 ***through November*** 1942. ***Southern states received*** $18,816,130,000 ***of this sum. Each state's share in millions of dollars is shown in the map below.***

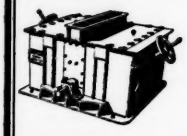


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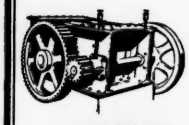
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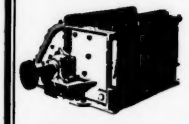
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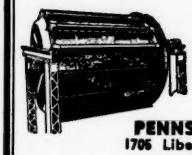
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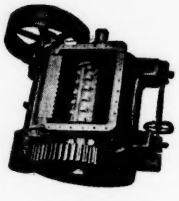


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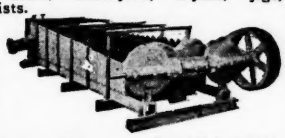
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Plastics for South Carolina

(*Continued from page 52*)

in the sizing and coating of paper. Other uses are adhesives in the manufacture of plywood and plywood products, waterproof paints, wall paper, and ingredient of spray insecticides, galalith or hardened-casein plastics and cement preparations. Soybean protein is considered equivalent to milk casein for all of the above uses and some properties are superior to those of milk casein. Refined grades are used as a diabetic food.

Production Of Soybean Casein

One plant producing soybean protein is now in operation in the United States and working on a seven-day week schedule. The production capacity is about 9 tons daily. It is estimated that the production capacity will have to be at least tripled to obtain the required amount of protein.

The price of soybean protein in quantity lots is at present about 11½ cents per pound. It is possible that improvement in the method of processing might reduce this price materially. With a reduction in price, however, new uses will no doubt develop and the consumption materially increase. In all probability the demand for soybean protein will continue to increase even after the present war emergency is over. This presents yet another opportunity for the alert businessman and southern farmer.

"Keeping Them Sailing"

(*Continued from page 27*)

ing sighted a vessel on the horizon. With high hopes of rescue in their hearts, they pulled towards the vessel only to find it was their abandoned ship. They once more boarded her, started the main engines, and after a long and arduous trip, made the coast of Africa. The tanker was temporarily repaired by native labor. A hull of mahogany wood was used to cover the wounds in her side, after which she started on a long trek to an east coast port of the United States. In two months this vessel was made completely seaworthy, all torn steel renewed, and we hope is today out again doing her part in the fight for Freedom.

Another illustration of the achievement of the ship repairing industry includes the conversion of one of our largest passenger ships into a troop transport in only seven days.

The vital importance of the ship repair industry to the war effort can best be understood when it is realized that the repair yards of this nation are virtually the only ones available for the repair of United Nations' ships. The repair yards of Europe and the Far East are no longer available and most of those on the British Isles are vulnerable to air attack.

Port Arthur Activity Reflects Texas' Industrial Gains

(*Continued from page 40*)

The J. & L. Steel Barrel Co., the Great Lakes Carbon Corp., the Standard Brass & Manufacturing Co. and other Port Arthur concerns all are among the firms going all out for the war effort, and which are prepared to turn to the demands of a peacetime economy as soon as Schickelgruber and Hirohito collapse. The manpower and machines that these and the other Texas industrial concerns have dedicated to winning the war can be converted readily to the needs of a nation at peace.

This extraordinary growth in Texas' plant capacity spells opportunity for the state and for her sons who will be returning from the battlefront eager for a resumption of their civilian pursuits. Because much of Texas' industrial growth is based upon the manufacture of products for which there will be a permanent and increasing need—and because the other plants easily can be converted into peacetime production—the manufacturing momentum thus far gained should carry the state swiftly up the path of prosperity toward the goal of a happy, healthy and well-rounded life for all its citizens.

New Plants and Expansions in the South

(*Continued from page 37*)

SOUTH PITTSBURG—repairs—Sequatchie Handle Works, W. L. Taylor, Supt., rebuild boiler house at factory.

Plant—E. I. du Pont de Nemours & Co., Wilmington, Delaware, have leased offices in Knoxville, for erection of plant in Knox, Roane and Anderson counties.

TEXAS

DALLAS—plant—Universal Corp., formerly Universal Building Products Corp., 2227 Cedar Springs, will construct plant on 5 acre site at Denton Drive and Maple; composed of 2 buildings with plant No. 2 ready for occupancy by March 31; concrete and vertical clay tile with corrugated asbestos roof and concrete floors; 100 x 107 ft.; will house copper brazing furnace and metal finishing plant; plant No. 1 of same type and construction will be 100 x 437 ft. and ready for occupancy by October; Walter W. Ahlschlager, Archt., Southland Life Bldg.

GILMER — dehydration plant — Dehydro Foods Corp., incorporated by E. P. Lamberth, 2008 N. Haskell St.; H. D. Lewis, 215 Hartsdale St., both Dallas, and associates, will establish dehydration plant with daily capacity of 30 tons of raw material; plant will consist of tunnel-type dryers and trucks.

HOUSTON—building—G. V. Dye, of Dye Welding Supply Co., 1109 Austin St., acquired building, 4500 block Fannin St.; will occupy.

McKINNEY—dehydration plant—Chamber of Commerce, C. Hansford Ray, Pres., signed contract with Gilbert C. Wilson Laboratories to operate proposed dehydration plant.

SMITH'S BLUFF—tanks—Pure Oil Co., R. L. Vernor, Gen. Mgr. of refinery plans construction of permanent tanks; fire damage repairs completed.

TROUP—brick plant—General Refractories Co., Real Estate Trust Bldg., Philadelphia, Pa., reported, acquired site for brick plant; former plant at Malakoff will not be rebuilt.

VIRGINIA

BUCHANAN — plant — James River Hydrate Supply Co., James C. Dillon, Pres., will probably rebuild burned plant.

WAYNESBORO — dehydrating plant — E. M. Quillen of Waynesboro Nurseries and Ralph Turpin, interested in establishment of an apple dehydrating plant; local committee appointed with Clinton McHenry, chairman.

WEST VIRGINIA

FAIRMONT—Suncrest Coal Corp.; R. H. Watkins; develop mines in Marion County and near Gypsy in Harrison county.

Pipeline—United Fuel Gas Co., Charleston, applied to U. S. Engineer Office, Huntington, for permission to lay a 10-in. gas pipeline in and across Elk River about 2 miles above the mouth of Elk Two Mile Creek.

William L. Ettinger, Regional WPB Food Specialist, Atlanta, Ga., approved establishment of dehydration plants at following places: Sowega Dehydration Co., Sylvester, Ga.; Mitchell Canneries, Inc., Thomasville, Ga.; Fine Products Co., Augusta, Ga.; King-Pharr Packing Co., Catherine, Ala.; Newkirk Industries, Inc., Camden, S. C.; Appt Brothers Co., Labeco, S. C.; Warren County Canning Co., McMinnville, Tenn.; Okeena Canning Co., Dyersburg, Tenn.; Havanna Canning Co., Havanna, Fla.; Belle Glade Canning Co., Belle Glade, Fla.; Peace River Canning Co., Wauchaula, Fla., Uddo & Taormina Co., Crystal Springs, Miss.; Laurel Starch Plant, Laurel, Miss.; application for establishment of 21 additional plants in the Southeast including one in Macon, Ga., are on file; daily average capacity of each plant, 20 tons.

Pennsylvania Railroad Co., receives bids Feb. 10 for purchase of $6,450,000 equipment trust certificates, part of a proposed aggregate issue of $12,240,000 of certificates under Pennsylvania Railroad Equipment Trust Series N; proceeds to finance ultimately the construction and acquisition of 5 electric passenger locomotives, 51 locomotives and tenders, 30 steam locomotive tenders, 6 Diesel electric switching locomotives and 1,000 gondola cars; with the exception of the Diesel electric switching locomotives, the equipment is to be constructed in the company's shops; estimated cost $15,300,000.

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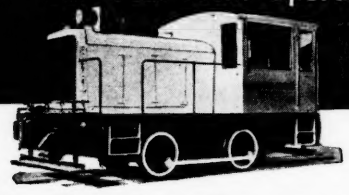


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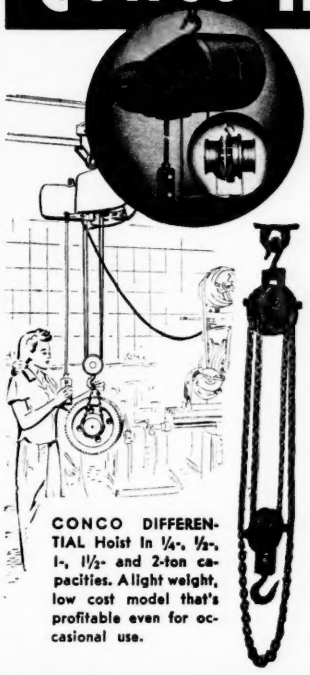
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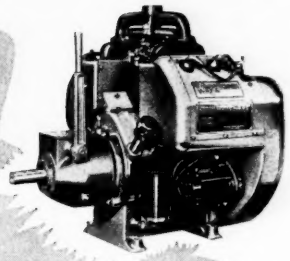
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THESE PAPERS contain interesting technical detail on the functioning of direct-fired self-contained warm air heaters which will be valuable to those who are responsible for the heating of service buildings, industrial plants and other large structures.

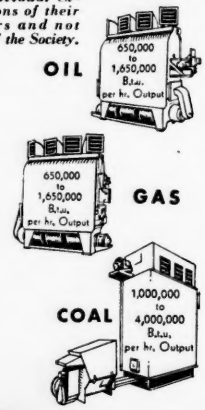
Development and Performance of a Coal-Fired Unit Heater
Presented at the Annual Meeting, New York, N. Y., November 30-December 4, 1942, of the AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

Design and Performance of a Direct-Fired Unit Heater
Reprinted from *Heating, Piping & Air-Conditioning* magazine, January 1942.

Heating Industrial Buildings with Direct-Fired Units
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The Lowly Peanut—Its Contribution to Oils & Fats

(*Continued from page* 24)

"Peanut oil, however, is entering new fields rapidly, because it has been found to be highly interchangeable with other oils. Face lotions, shaving creams, face powders, rubbing oil high in phosphorus for treatment of infantile paralysis, a specific for asthma, the highest grade of salad oil, cooking compounds and shortening, a superior textile oil, a source of glycerine for making munitions, a substitute for imported coconut oil for plating iron with tin, as an insecticide base and emulsion for sprays, as a leather impregnator, as diesel engine fuel and lubricant, and as a dilutent for other oils—these are some of the many new uses to which it is increasingly put.

"Since each ton of farmer's peanuts yields 500 to 650 pounds of shells or hulls, now mostly burned as fuel at the mills, there is also available annually around 400,000 tons of such waste, which under more recent chemical scrutiny is looked upon as a source of cellulose for plastics, paper, fillers, furfural, floor-sweeping compounds, insulation materials and others.

Peanut Content

"Besides the highest percentage of vitamin B_1 and B_2 of any vegetable the peanut also has the highest content per weight of protein, carbohydrates, fat, calories and phosphorus of any vegetable food. Its lime content also is high.

"Especially high is the Vitamin B_1 content within the outer red skin of the little Spanish peanut of the Southwestern states, used largely for peanut butter and salted peanuts.

"Virginia is the center of the Southeast's peanut processing industry, with large factories converting Jumboes and runner types of peanuts into widely distributed confections and other products.

"Georgia and Texas lead in peanut acreage, followed by North Carolina and Alabama. Georgia and Texas, each planted more than one million acres to this crop during 1942,

(*Continued on page* 57)

HYDRAULIC TURBINES-FRANCIS AND PROPELLER TYPES

(We are building fighting ships now)

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NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY

NEWPORT NEWS, VIRGINIA

The Lowly Peanut—Its Contribution to Fats & Oils

(*Continued from page 56*)

with a substantial increase scheduled for 1943.

"In 1940, it seems, out of a crop of 875,000 tons of peanuts nearly 300,000 tons were crushed for oil.

"One ton of peanuts normally yields about 600 pounds of oil, and 800 pounds of peanut cake or meal, which competes with cottonseed meal or soybean or linseed oil meal.

"An acre of cotton is likely to produce 80 pounds of oil, whereas an acre of peanuts may average 160 pounds or more. This explains why the government encouraged the peanut as an oil crop.

"Peanuts contain about twice as much oil as soybeans.

"It is estimated that in normal years about 400,000,000 pounds of farmers' peanuts are made into 250,000,000 pounds of peanut butter."

United States Iron Ore Reserves

(*Continued from page 23*)

to 13.9% from 14.5%.

Alabama is the most important producer outside of the Lake Superior district. Mines there in 1941 accounted for 8.5% of the United States total and 58.4% of the total excluding Lake Superior. Shipments of 7.9 million tons established a new high record, rising 32% over 1939 as compared with a gain of 78% in lake ore shipments during the same period. Prior to World War II, the highest volume was attained in 1917, when shipments totaled 7.1 million tons. Open pit mining increased in 1941, but these operations still accounted for only 15% of the total as compared with 11% in 1940.

Coal—A Product of Countless Uses

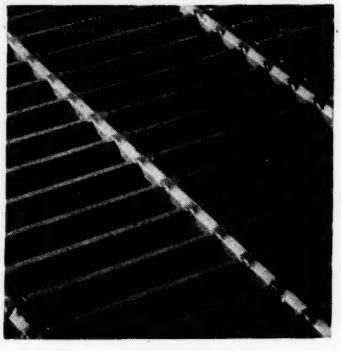
(*Continued from page 29*)

scouring, bleaching and dyeing operations, such are the diversity of products originating in coal.

Coal has been known for over 2000 years, yet its full chemical possibilities are yet to be realized. The stress of war has accelerated greatly the investigation of coal as a chemical raw material. Out of that intense research will come new chemicals-from-coal for the better world envisioned after hostilities cease.

Voltage Stabilizer Announced

General Electric Co., Schenectady, N. Y., has announced a new voltage stabilizer which provides a constant output of 115 volts from circuits varying between 95 and 130 volts. This stabilizer is insensitive to load power factor and is not affected by variations in load or by changes in power factor. It is self-protecting, and will operate continuously throughout the range from open circuit to short circuit without damage. The new stabilizer can be applied wherever close voltage regulation is requisite to good operation—in radio transmitters, electronic-tube apparatus, motion-picture sound equipment and projectors, telephone apparatus, X-ray machines, photo-cell equipment, and in the calibration of meters, instruments and relays.



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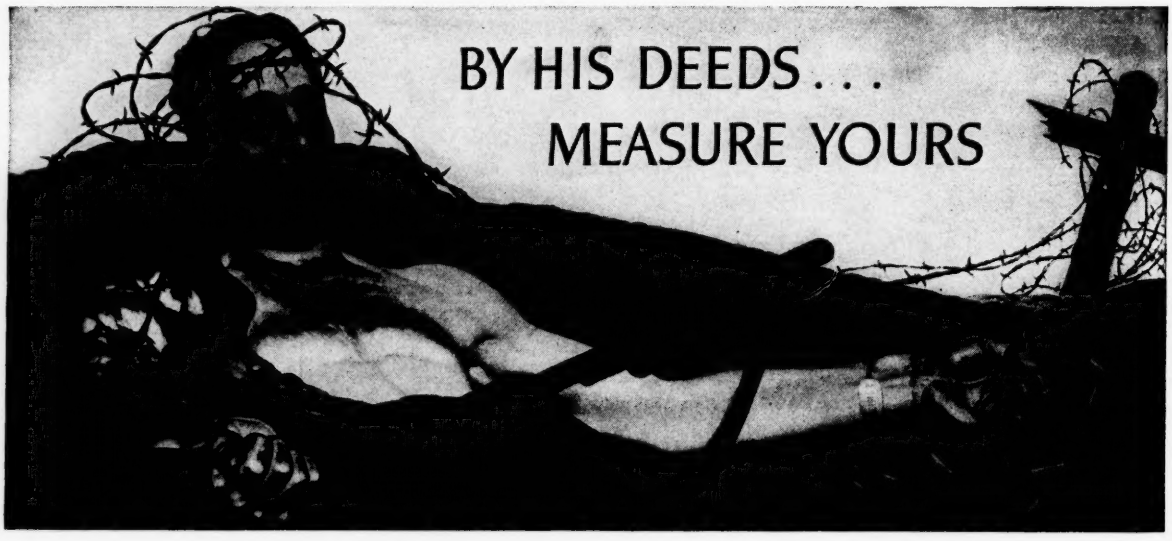
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IT is not pleasant to have your peaceful life upset by wartime needs and restrictions and activities.... It is not pleasant to die, either.... Between you who live at home and the men who die at the front there is a direct connection.... By your actions, definitely, a certain number of these men will die or they will come through alive. If you do everything you can to hasten victory and do every bit of it as fast as you can... then, sure as fate you will save the lives of some men who will otherwise die because you let the war last too long.... Think it over. Till the war is won you cannot, in fairness to them, complain or waste or shirk. Instead, you will apply every last ounce of your effort to getting this thing done.... In the name of God and your fellow man, that is your job.



The civilian war organization needs your help. The Government has formed Citizens Service Corps as part of local Defense Councils. If such a group is at work in your community, cooperate with it to the limit of your ability. If none exists, help to organize one. A free booklet telling you what to do and how to do it will be sent to you at no charge if you will write to this magazine. This is your war. Help win it. Choose what you will do—now!

EVERY CIVILIAN A FIGHTER

CONTRIBUTED BY THE MAGAZINE PUBLISHERS OF AMERICA

MANUFACTURERS RECORD FOR

Domestic Clays to be Used as a Source of Aluminum

Pointing out that the supply of native high-grade bauxite for aluminum in the United States is limited, Dr. R. S. Dean, assistant director of the Bureau of Mines, today reported to the annual meeting of the American Institute of Mining and Metallurgical Engineers at New York City that a master plan has been formulated whereby sufficient amounts of this vital war metal can be obtained through utilization of domestic clays, alunite, second-grade bauxite and other alumina-bearing materials.

The program, he stated, has six principal phases:

1. Further exploration of domestic bauxite to find increased reserves of Bayer - grade (first - grade) bauxite needed for existing plants now capable of using only Bayer-grade bauxite in producing alumina to supply Bayer-grade bauxite for Canadian plants, and to provide more high-grade bauxite for use in abrasives in American's war plants.

2. A four-fold increase in the Bureau's exploration for second-grade bauxite for use in Bayer plants now being converted to use this second-grade material. This should keep reserves virtually constant.

3. Construction of a plant to mill several millions of tons of high-silica bauxite and produce 1,800 tons of first-grade bauxite concentrate daily to supply existing Bayer plants until they can be converted. Such a milling plant could be constructed in three months, would be located in an area which has abundant reserves of high-silica bauxite, and would utilize idle milling equipment.

4. Construction of commercial plants for the production of alumina from domestic clays.

5. Erection of commercial plants for extracting alumina from alunite.

6. Continued research in metallurgical and milling problems to assist the entire aluminum industry.

Explaining that hight-grade bauxite, much of which is imported, is the principal source of alumina (for aluminum) in the United States, Dr. Dean asserted: "Our supply of high-grade bauxite in the United States is limited. How limited, I am not permitted to say, but there is a very definite limit to the length of time our high-grade bauxite resources will last at the present rate of exploitation unless supplemented, even though exploration projects have considerably increased the figure on reserves."

"It is worse than precarious to depend on water-borne imports (of high-grade bauxite)," Dr. Dean continued. "So we turn to our low-grade bauxite which is high in silica or iron, to alunites, to limitless resources of clays, halloysite, and the like."

The Bureau of Mines has reported that the conversion of Bayer plants may take a year, whereas if the milling plan were adopted, dependence upon imports would be lessened within three months time, the United States would have a continuing source of high-grade bauxite concentrates for abrasives, chemicals, and for shipments to Canada, and this Nation's aluminum-producing plants would be able to reach capacity production much sooner.

In urging the utilization of alunite and clays, it is pointed out that even with intensive exploratory work for new bauxite, a milling program, and the conversion of Bayer plants, the United States still cannot produce sufficient alumina "to place us in a secure position for a long war."

Material for Drilling New Natural Gas Wells Banned

The use of material for the drilling of new natural gas wells in the Texas Panhandle Field has been banned by Petroleum Administrative Order No. 9.

Effective immediately, the order prohibits the use of any materials to drill, complete, or provide additions to any well in any discovered or undiscovered natural gas field in Carson, Collingsworth, Gray, Hansfield, Hartley, Hutchinson, Moore, Potter, Sherman, or Wheeler Counties, Texas.

PAW may issue exceptions to the present ban on the use of materials in the field. Applications to use material to drill, complete, or provide additions to any well must be made by filing a letter in quadruplicate or by sending a telegram to the Director of the Natural Gas and Natural Gasoline Division, Petroleum Administration for War, Interior Building, Washington, D. C., Ref. PAO No. 9.

Explaining the need for the order, Deputy Petroleum Administrator Ralph K. Davies said:

"Over 1,700 (seventeen hundred) wells now are producing natural gas in the Texas Panhandle Field. They are keeping available natural gas pipelines loaded to capacity.

"Until an outlet for more gas is available, it will not be in the interest of the war program to use scarce materials for the drilling of wells whose production cannot be made available to consumers because of lack of transportation facilities."

United States Cotton Supply

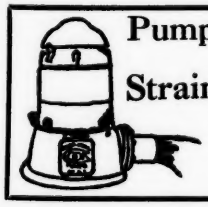
Although large supplies of short-staple, low-grade cotton are on hand, U. S. supplies of the higher grades and longer staples of Upland cotton are relatively small.

Total Upland cotton supply for the current season is slightly larger than last season's, but requirements are also likely to be a little larger.

The 1942-43 supply, which includes carry-over and production, is expected to total about 22,966,000 running bales against a supply of 22,444,000 bales in

(*Continued on page* 63)

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Partial Listing of Items In Stock Subject to Prior Sale

POWER PLANT EQUIPMENT

AIR COMPRESSORS

CFM	MAKE	SIZE	TYPE
2312	Ingersoll-Rand	20x20x16	Steam
1400	Ingersoll-Rand	22x14x16	Steam
1156	Ingersoll-Rand	20x12½x16	Steam
1198	Ingersoll-Rand	16x16x14	Belt
888	Ingersoll-Rand	19x12x16	Belt
599	Ingersoll-Rand	16x10x14	Belt
528	Ingersoll-Rand	14x12	Belt
368	Ingersoll-Rand	12x10	Belt
368	Ingersoll-Rand	10x12x10	Steam
311	Pennsylvania	12x18	Belt

A. C. TURBINE UNITS

4000 KVA Al. Ch. Cond., 3/60/2300/3600 RPM
2—3125 KVA G. E.—Curtis Cond., 3/60/2300/3600 RPM
2500 KVA West. Cond., 3/60/600/3600 RPM
1500 KVA West. Cond., 3/60/600/3600 RPM
750 KVA G. E. Cond., 3/60/600/3600 RPM
625 KVA G. E.—Curtis Cond., 3/60/2300/3600 RPM
625 KVA West. Non-cond. gd., 3/60/2300 volt, 6000/900 RPM
500 KVA West. Cond., geared, 3/60/2400 volt, 6000/900 RPM

MOTOR GENERATOR SETS

1000 KW Gen. Elec. 3-unit Set with 2—500 KW, 150 volt D.C. Generators—1400 HP Synchronous 3 phase, 60 cycle, 4000 volt, 514 RPM
275 KW Allis-Chalmers 3-unit Set, 450 RPM—150 KW Gen. 150 volt and 125 KW Gen., 240 volt 400 HP Syn. Motor, 3/60/4500 volt
150 KW Ridgeway 250 volt—3/60/2300/900 RPM Syn.
100 KW Westinghouse 125 volt, 360/220/600 RPM
75 KW West. 125 volt 112 HP sq. cg., 3/60/2300/1200 RPM
50 KW G.E. 125 volt—3 phase, 60 cycle, 2200 volt, 720 RPM
35 KW Fairbanks-Morse 250 volt, 60 HP Synchronous Motor, 3/60/220/1200 RPM
25 KW Westinghouse, 125 volt, 1200 RPM, 3/60/220 volt

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1 to 48 inch	4	1 to 48 inch	8
1 to 48 inch	5		

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10 to 48 inch	5		

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Width	Ply	Top	Pulley
12	4	3/32	1/32
14	4	3/32	1/32
16	4	3/32	1/32
18	4	3/32	1/32
20	4	3/32	1/32
24	4	3/32	1/32
18	4	⅛	1/32
24	5	⅛	1/32
30	5	⅛	1/32

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Lorain 75B, 1½ yd. Shovel, gas
Bucyrus Erie Model 103S, 1 yd. Shovel, gas
Bucyrus Erie 50B Steam Shovel, 2 yds.
Northwest Model 105 Gas Crane
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Ohio Loco. Crane, 22½ tons, electric

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United States Cotton Supply

(Continued from page 59)

1941-42. The total 1942-43 disappearance, including domestic consumption and exports, is not yet available but may slightly exceed the 11,968,000-bale disappearance of the previous season, it was indicated.

Judging from the 1941-42 disappearance, the 1942-43 supply (on August 1, 1942) of 13/16" and shorter cotton equaled requirements for approximately 5 years; of ⅞" and 29/32" for 3½ years; and of 15/16" and longer for a little over 1½ years. These supplies have been reduced, however, by consumption and exports since the beginning of the current season.

Based on the 1941-42 disappearance, the 1942-43 supply (carry-over plus the 1942 crop) of Strict Middling and better cotton equaled requirements for only about 1¼ years—or about enough to last until the 1943 crop begins to move. Supplies of Middling were equal to requirements for about 1½ years, of Strict Low Middling for a little over 2 years, and of Low Middling and lower for 4 years. These figures probably mean, Department of Agriculture officials say, that some mills have already shifted to lower grades where this is possible under present yarn and fabric specifications and that more such shifts will become necessary.

Shifts to shorter staples and lower grades are possible in many cases, but they usually mean reduced production per man and per machine of needed textiles. For a good portion of the fabrics used to fill military and essential civilian needs, shifts to lower qualities may not be possible without reducing quality specifications, and in some cases such shifts are virtually impossible.

On the other hand, shifts to higher grades and longer staples result in higher quality goods and more efficient production. This is why the Department is asking, as a war measure, that farmers increase the proportion of longer staples and higher grades in the 1943 crop. Since staple length depends largely on variety every farmer is being urged to plant longer staple varieties, as 15/16" instead of 13/16" and ⅞", and 1" instead of 15/16". Also, though weather conditions largely determine cotton grade, high grades are impossible without careful picking and good ginning.

Accordingly, the cotton program for 1943 calls for production (1) of more longer staple varieties, especially in areas where this will not materially reduce yields of high-grade cotton; (2) of other essential war crops—as food and feeds—in areas unsuited to long-staple or high-grade cotton; and (3) of higher grades as a result of better picking and ginning.

INDEX FOR BUYERS

Page Numbers Indicate Where Products Can Be Found

Aluminum 12
Architects 65
Banks and Bankers 48
Boilers 66
Breakers 53
Brakes (Hydraulic) 5
Brick 66
Bridges 16, 45, 49
Chemists 65
Classified Opportunities 63
Compressors (Air) 5
Contractors 17, 49, 65
Creosoted Materials 45, 51
Crushers 53
Drawing Materials 65
Dredging Contractors 49, 65
Engineers 17, 18, 65
Engines (Diesel, Gasoline, etc.) .. 3, 55
Flexible Shaft 55
Floor (Armoring) 53
Flooring (Steel) 45, 57, 64
Galvanizing 59
Gas 50
Gears 53
Geologists 65
Glass (Window, Wire, etc.) 9
Granite 66
Grating (Steel) 57
Grilles 53
Grinding Wheels 2, 55
Heating Apparatus 56
Hoists 55
Hotels 48, 59
Hydrants 7
Insulation 4
Locomotives 55, 68
Lumber (Creosoted) 45, 51
Machinery (New and Second Hand) 60, 61, 62, 63
Paint 8
Paper (Tissue) 48
Perforated Metal 53
Piling, Poles, etc. Creosoted 45, 51
Pipe (Cast Iron) 45
Pipe (Steel and Iron) 51, 64, 66
Pipe (Wood) 51
Professional Directory 65
Pumps 6, 59
Railroads 8, 11, 13
Road and Street Material .. 45, 49, 66
Roofing 4
Sand and Gravel 49, 66
Screens 53
Screws and Nuts 45, 64
Sheets (Steel, Galvanized) 64
Shipbuilding 51, 56
Sites (Industrial) 8, 11, 13, 20, 46
Skylights 9
Steel Plate Work 10, 16, 51, 66
Steel Products 43, 64
Stone (Crushed) 45
Structural Steel 16, 45, 49, 64
Surveying Instruments 65
Tanks and Towers 10, 51, 66
Treads (Stair) 53, 57
Turbines (Hydraulic) 56
Valves 7, 47
Water Supply 6, 59
Welders 67
Woodworking Machinery 9

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